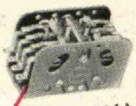
TECHNOLOGY REVIEW

March 1954

technology
review
Published by MIT



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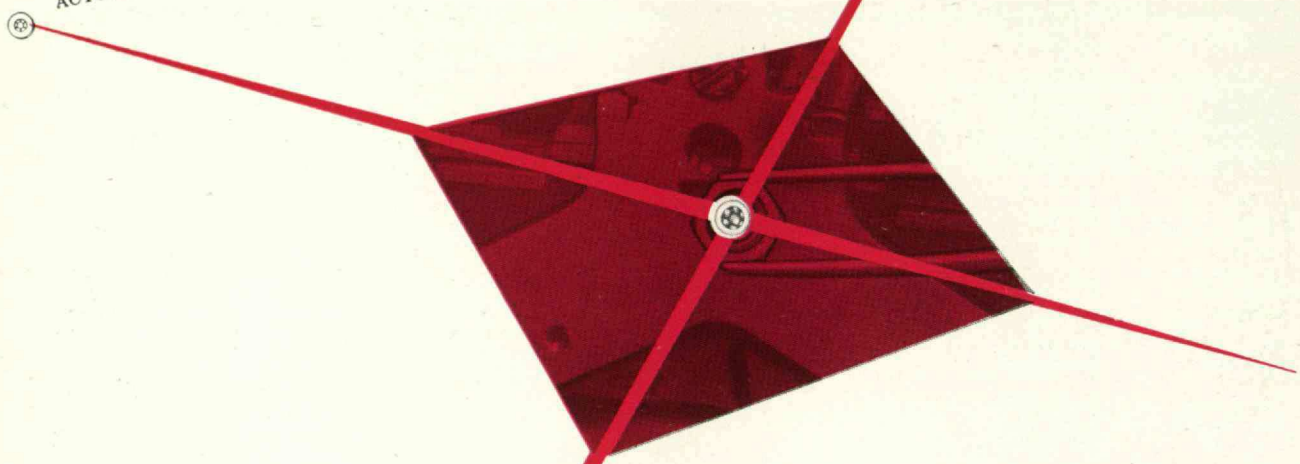

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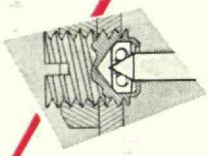
with MPB bearings!



OPERATING CONDITIONS — consistently accurate response to equal amounts of current . . . partial shaft rotation . . . strength to withstand severe shock, vibration, plus extreme temperature changes. CRITICAL — wear, low starting torque, trouble-free operation of bearings supporting armature shaft, RESOLVED—by use of 2 MPB No. 2A's, miniature angular contact bearings.

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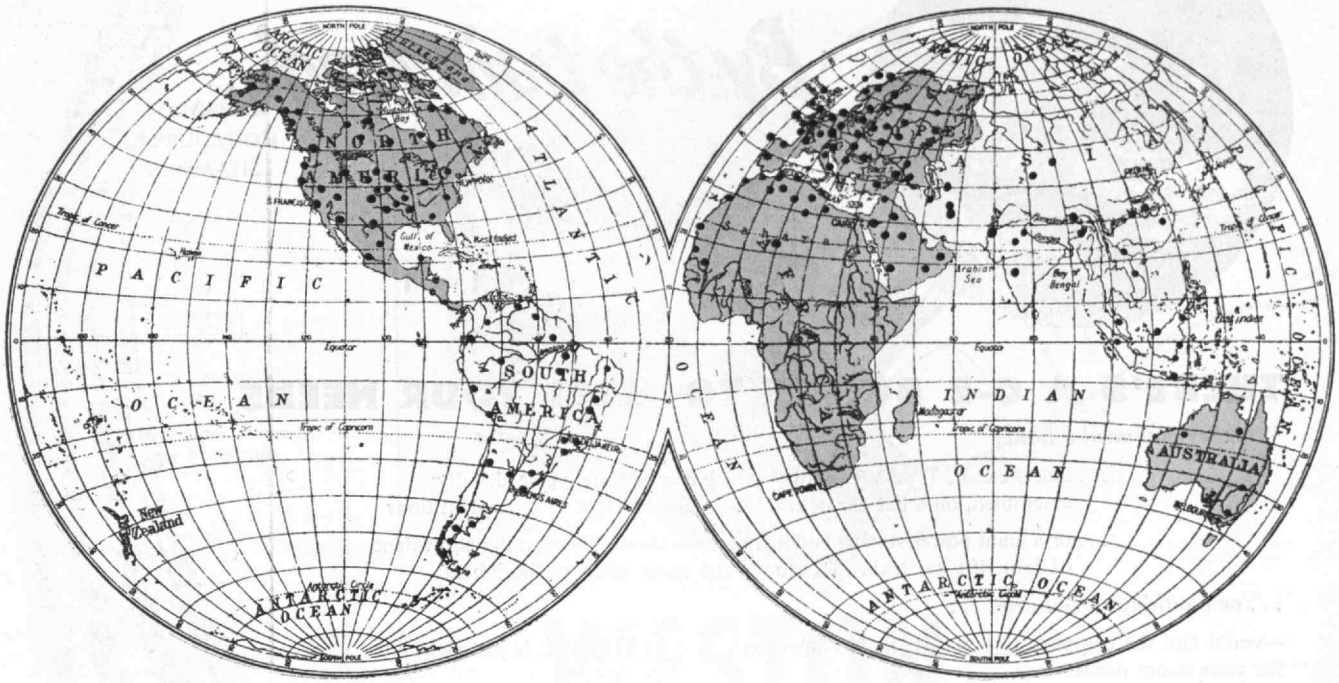

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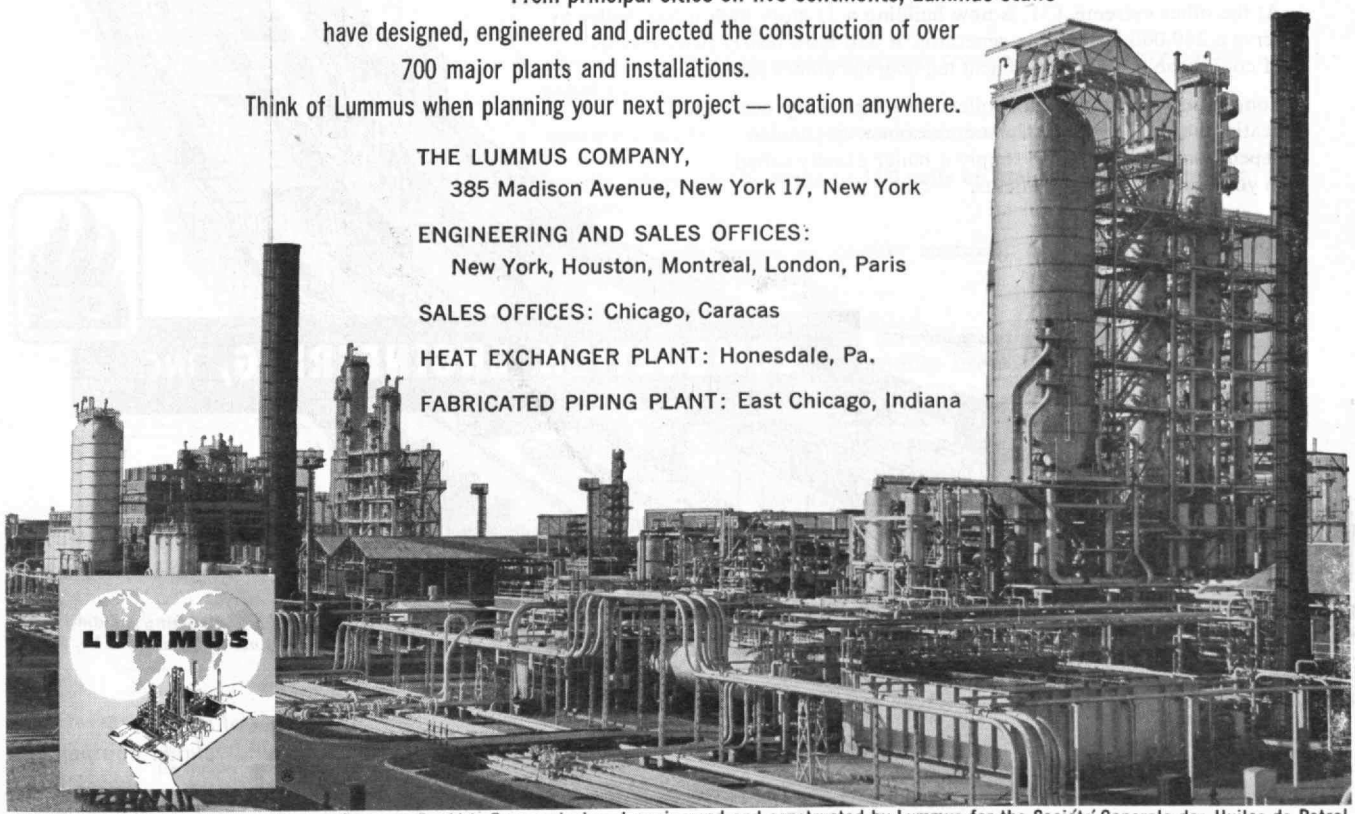
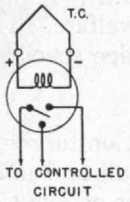


ILLUSTRATED: 40,000 B/D petroleum refinery at Dunkirk, France, designed, engineered and constructed by Lummus for the Société Generale des Huiles de Petrol

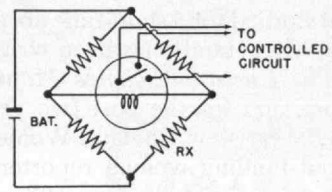
THE TECHNOLOGY REVIEW, March, 1954, Vol. LVI, No. 5. Published monthly from November to July inclusive at Emmett Street, Bristol, Conn. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50. Canadian and Foreign subscription $4.00. Entered as second-class matter December 28, 1949, at the Post Office at Bristol, Conn. under the Act of March 3, 1879.

Wherever *reliable* sensitive control is required

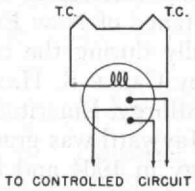
SUGGESTED APPLICATION SCHEMATICS



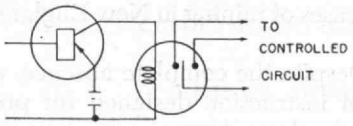
Temperature Control and Protection



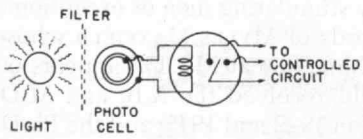
Resistance Selection



Temperature Differential Control



Transitor Selection



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Designing, or redesigning, for greater simplicity, compactness or reliability, investigate these widely used, ultrasensitive relays. So sensitive that they operate direct on the output of thermocouples, resistance bulbs or photocells, they enable designers to cut manufacturing and maintenance costs by dispensing with involved circuits and many troublesome components. To help you adapt these rugged relays to your problems, engineering assistance is freely offered. Write . . . WESTON Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, New Jersey.

WESTON *Instruments*

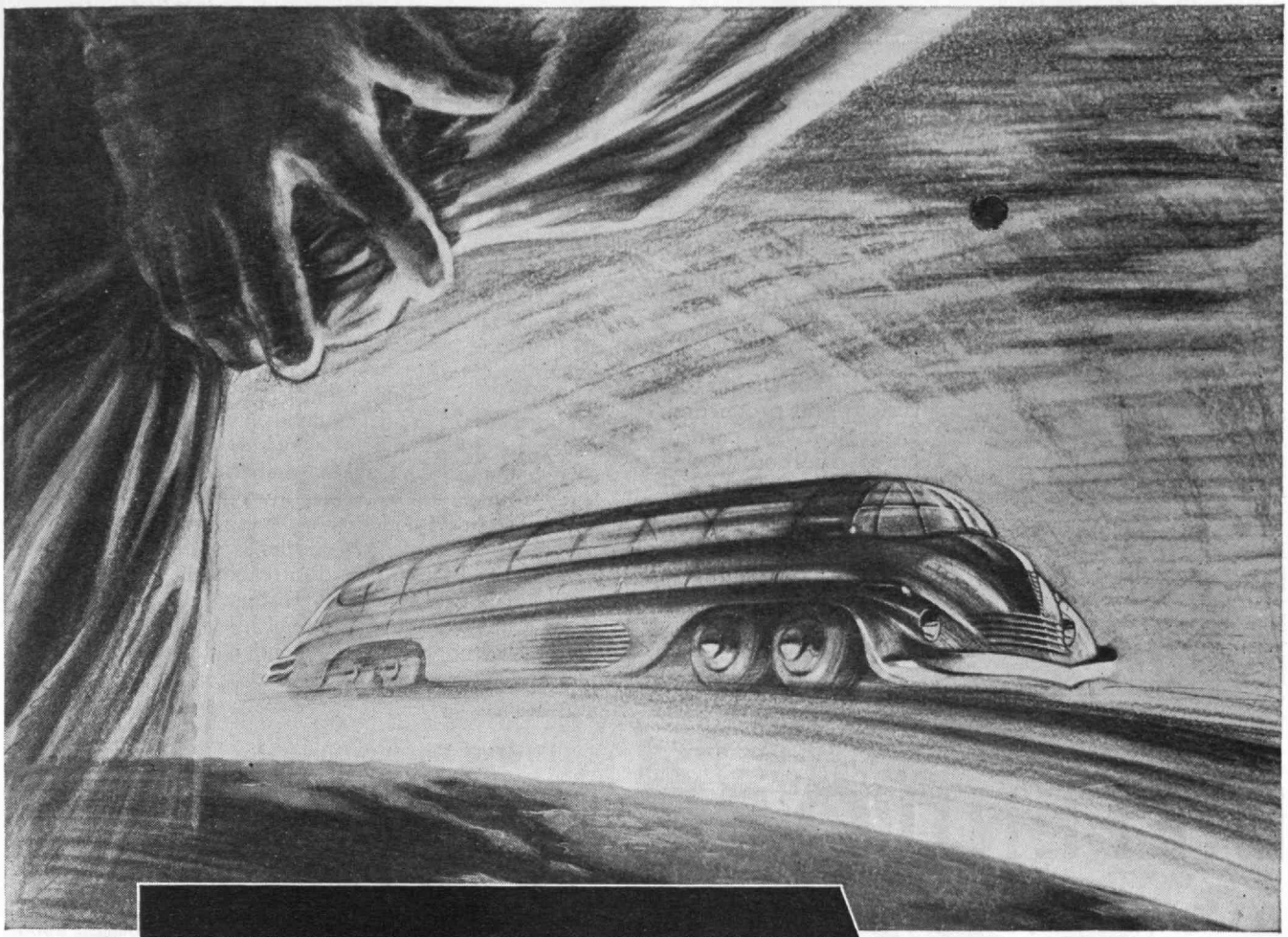
THE TABULAR VIEW

Educational Feedback. – When the Graduate School of Brandeis University was inaugurated on January 14, Technology's President, JAMES R. KILLIAN, Jr., '26, delivered the major address. The Review is happy to bring to its readers (page 239) this address, "The University and the Community." In speaking of the new relationship which universities have developed with agriculture, industry, management, and labor, Dr. Killian presented a study of the ways in which the intellectual and physical facilities of the modern university generate new firms, products, and services whose wealth is returned to their community for the common welfare. In the process, the university is able to produce special benefits for its own community.

Physical, Quizzical Prof. – Contrary to the views of many, physics need not be dull and uninspiring. In fact, MARY HANDY, staff writer of *The Christian Science Monitor*, finds it can be fabulous, at least when taught by Hans Mueller, M.I.T. Professor of Physics. Miss Handy received the A.B. degree from Principia College, Elsah, Ill., and studied for a short time abroad at Oxford and at Paris. Miss Handy has been writing about education for *The Christian Science Monitor* for the past three years, and for the past two years she was awarded a medal by New England Women's Press Association as outstanding woman reporter in New England. Her story is reprinted (page 243) as it appeared in the December 23 issue of the *Monitor*.

New England Mining. – Some interesting and unusual sidelights on the importance of New England minerals and mining, especially during the colonial times, are given (page 245) by CARLE R. HAYWARD, '04, Professor of Process Metallurgy, Emeritus. Born in Yankton, S. D., Professor Hayward was graduated from the Course in Metallurgy in 1904 and for the next two years was instructor in science at Bellows Free Academy in Fairfax, Vt. He has been associated with the Department of Metallurgy since 1906, and has written extensively on process metallurgy, especially of copper, lead, and zinc. His article records a surprising number of cases of mining in New England.

Tech's Medics. – Despite the complete absence, at M.I.T., of a course of instruction designed for premedical students, Technology Alumni who take up medicine have made an impressive record. The reason for this gratifying state of affairs may be the fact that "The Institute abounds with excellent courses in many fields, taught by stimulating men of exceptional ability" to use the words of MYLES MAXFIELD whose article, "Premedical Education at M.I.T.," appears on page 251. Dr. Maxfield received the A.B. and M.D. degrees from Harvard in 1942 and 1945, and the Ph.D. degree in biophysics from M.I.T. in 1950. He was a research associate in biophysics at M.I.T. 1950–1952, and since 1952 has been assistant professor of biophysics, and member of M.I.T.'s medical staff.



BEYOND THE HORIZON....

Coming developments in transport—still beyond the horizon—will depend very largely upon the new alloys the metallurgists can supply the engineer. The laws of thermodynamics dictate higher temperatures for greater efficiency in engines and, as the addition of Molybdenum to many alloys allows the use of higher temperatures, it will certainly be used more and more in the engines of the future.

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MAIL RETURNS

Comments on the January Issue

FROM RAYMOND E. HANSON:

The urge to congratulate you upon the current issue of The Technology Review is too strong to resist. Dr. Carmichael's article, "Psychology, the Machine and Society" should bring forth acclaim. It seems to me the most enlightening, erudite exposition of the fallacy of certain dangerous, present-day trends that I have seen to date. And I believe you have done a great service to your readers in publishing this very superior essay of a type so much needed today to combat tendencies which a study of history reveals have always led to disaster, disillusion, and destruction.

The article on decorative tiles is both interesting and informative. I look forward to reading Part II.

"Yellow Fever's Role in History," dramatizing as it does, a rather unknown phase of history, makes a worthy companion for these above-mentioned articles.

Boston, Mass.

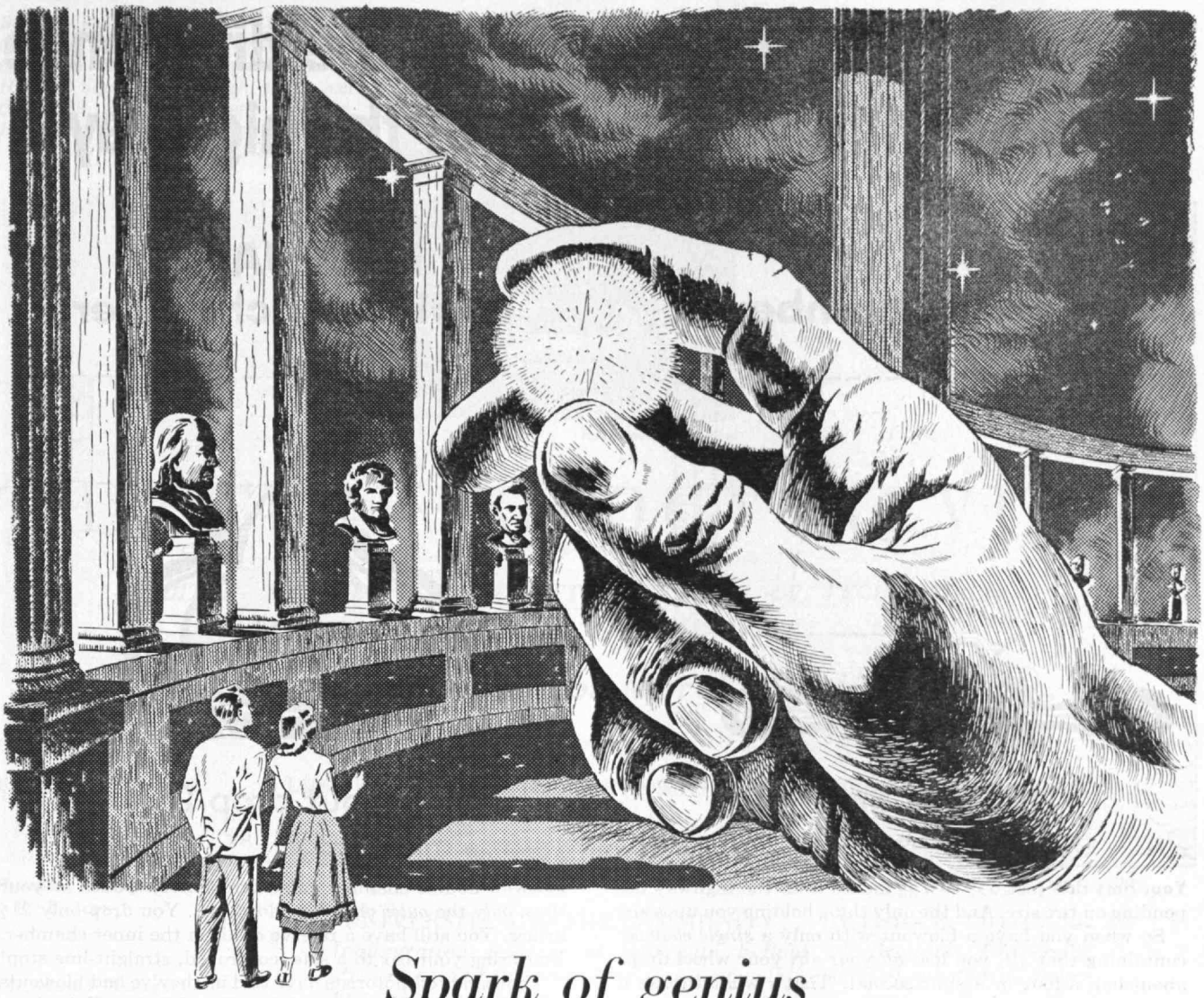
Tiles of England and the United States

FROM E. A. LANE:

Your article on tiles is most interesting, and very well presented; I am glad to see that you have included several illustrations of pieces in the Museum. No doubt you will be following it up with a further article, and I look forward to this – especially if it contains information about tiles made in the United States. We over here have almost no knowledge of the latter.

In England there are two or three collectors of English delftware who have, during the last five years, made fairly intensive studies in the subject of English tiles, attempting to attribute them to the different centres of Lambeth, Liverpool and Bristol. Prewar information now seems somewhat out of date; but the present experts do not always agree with each other!

Victoria and Albert Museum
South Kensington, London, S.W. 7



Spark of genius

"The great objective...
is to open the avenue of scientific knowledge to youth"*

Franklin...Fulton...Lincoln...Bell...Willard—geniuses? Yes, in the sense that they had the creative spark and the ability, courage, and leadership to see and speed to us inventions and ideas beyond the horizon of their day.

FUTURE IN TODAY'S YOUTH—The scientists, statesmen, inventors, and humanitarians of tomorrow are among our youth of today. The future depends upon our discovering, fostering and using their creative genius.

OPPORTUNITIES ABOUND for all of us "to direct the genius and resources of our country to useful improvements, to the sciences, the arts, education..."*

SCHOLARSHIPS AND FELLOWSHIPS—To help meet this need, Union Carbide has established undergraduate scholarship and fellowship programs in a number of liberal arts colleges and technical institutions to assist deserving students who are interested in business and scientific careers.

THE PEOPLE OF UCC hope you, too, will do everything in your power to discover and encourage the creative talent of our American youth. In them is our greatest assurance of an ever better tomorrow.

TO LEARN MORE about the Union Carbide scholarships and fellowships, their purposes, and the colleges and universities in which they have been established, write for booklet A.

*from Tablets in the Hall of Fame, New York University.

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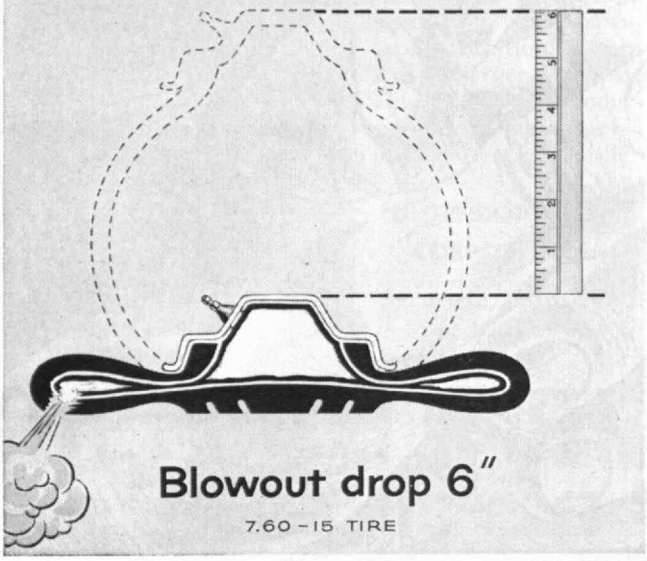
These few inches can mean the difference between life and death on the highway!

Single Chamber



Blowout drop 6″

7.60 – 15 TIRE

Your rims ride just 5½ to 7½ inches from the highway depending on tire size. And the only thing holding you up is air!

So when you have a blowout with only a *single chamber* containing that air, you lose *all* your air, your wheel drops about half a foot in a split second! That's what throws a car out of control, into danger!

LIFEGUARD double air chamber

Blowout drop 2½″

7.60 – 15 TIRE

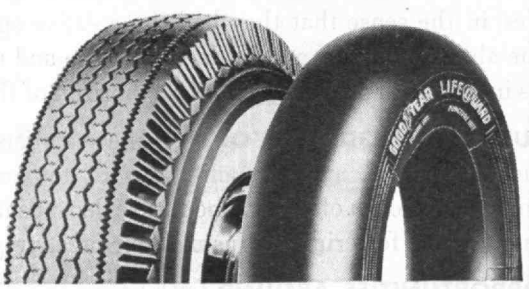
But with double-chamber LifeGuard Safety Tubes in your tires, *only* the *outer* chamber blows out. You drop only 2½ inches. You still have a reserve of air in the inner chamber. You bring your car to a safe, controlled, straight-line stop!

Thousands of motorists have told us they've had blowouts without even realizing it with LifeGuard Safety Tubes!

Only the double-chamber LifeGuard principle protects against blowout accidents! LifeGuards fit any tires!

No matter what make tires you now own, you can make them safe against blowout accidents *and* guard against the inconvenience of punctures with New LifeGuard Safety Tubes. And you can use them in three or more sets of tires for 100,000 miles or more of blowout-safe, puncture-safe driving.

So you actually save 20% to 43% per wheel over other types of blowout and puncture protection. See your Goodyear dealer soon! Goodyear, Akron 16, Ohio.



America needs better, safer roads. Let's bring them up to PAR.

NEW LIFEGUARD SAFETY TUBES by GOODYEAR

LifeGuard, T. M.—The Goodyear Tire & Rubber Company, Akron, Ohio

Boston, eight-mile marker (February Contents page) is in Christ Church Cemetery, Cambridge Common. From Harvard Square it was eight miles over the 1666 Bridge, through Brighton, Brookline, and Roxbury over the "neck" to the Old State House.

Raymond E. Hanson

How Well Do You Know Boston?

Not more than a mile from the main group of M.I.T. buildings is this statue of an early visitor to these shores. Do you know who the statue represents and where it is? If not, see Contents page for April.

THE TECHNOLOGY REVIEW

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EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONTENTS *for March, 1954*

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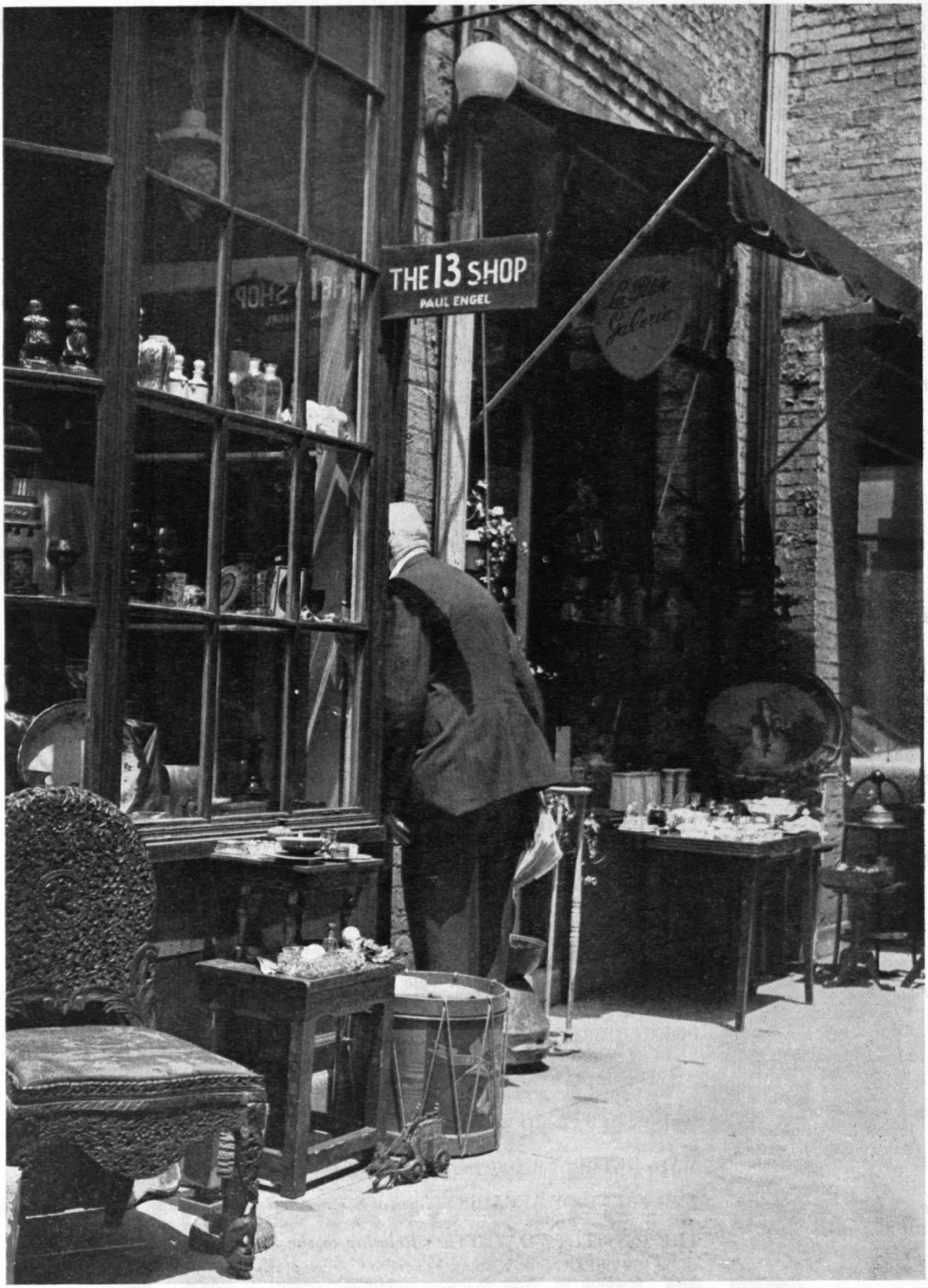


Ward Allan Howe

The Curious Window Shopper

Patio with antique shops, on East 51st Street, New York City

THE TECHNOLOGY REVIEW

Vol. 56, No. 5 March, 1954

The Trend of Affairs

Molecules of Life's Processes

WHEN we have increased our understanding of the elementary principles governing the behavior of living systems, then can we expect to control and benefit the actions of such systems. Such is the view expressed by David F. Waugh, Associate Professor of Physical Biology at M.I.T., who gave the Popular Science Lecture entitled "Proteins, Giant Molecules of Life's Processes" in the Society of Arts series at M.I.T. on Sunday afternoon, January 17.

Proteins recur, Dr. Waugh explained, wherever we attempt to obtain a basic understanding of the chemical and physical processes which, in sum total, give the characteristics of life to cells and tissues. Important examples which illustrate the wide spectrum of the occurrences and functions of proteins include the following: (1) Proteins comprise all of the enzymes, the mediators of the vast number of chemical transformations involved in the maintenance and repair of tissues and in the liberation of energy; (2) Proteins form the gel-like structures found to accompany the division of animal and plant cells; and the bulk of the contractile mechanism of muscle is also made up of proteins of different kinds; (3) The connective tissues which lend mechanical support to our organs, and by virtue of high mechanical strength as in tendon, transfer force, are also largely protein; (4) Finally, many important functions of blood, such as coagulation, are dependent upon the interplay of protein molecules.

Protein molecules of soluble character are known in many instances to be thousands of times larger than water molecules. Consequently, proteins must be composed of thousands of atoms, largely found in the groups hydrogen, oxygen, carbon, and nitrogen. Despite their size and the fact that the only repeating unit in these molecules is the amino acid (a relatively small unit), the molecules of each kind of a protein are constructed alike, at least within the limits of present methods for detecting differences. Within the last two decades, our knowledge has advanced to the point where we may attempt to picture the way in which the hundreds of amino acids are put together to form the structure of the protein molecule. It is known that the amino acids are joined together in chains much longer than the length of the molecules which they make up. The chains of amino acids, therefore, must be tightly folded or coiled; and separated portions of the amino-acid chain must come together and interact to lend stability to the coil.

Since the amino acids in the protein chain do not all have the same character, we expect and find a variety of interactions to lend structural stability. A considerable stability of internal structure is necessary to produce giant molecules – all of which are alike for a given protein.

The specific properties of different proteins – such as the strength of tendon, the hundreds of different kinds of enzymes like pepsin, trypsin, and cellular enzymes, the fibrinogen molecules responsible for blood coagulation, and the protein hormones, such as insulin and growth hormone – all owe their origins to factors such as the particular variety of amino acids, the sequence of amino acids in the chain, the nature of the coiling of the chain, and to factors not yet precisely defined.

In many instances, as in blood coagulation, it is found that protein molecules can come together, join, and form highly specific structures. Protein activities of this nature are undoubtedly at the basis of the grouping of enzymes and other molecules together to make the microscopically visible structures which are so important in the activities of living cells.

Considerable progress has been made in increasing our understanding of protein structure in recent years, Dr. Waugh stated. As our knowledge of the basic biological elements increases, who can tell what benefits to mankind may be anticipated in the future?

Life History of Clouds

CLOUDS may yield their life histories to a new cloud spectrograph developed by meteorologists at the Institute. Delbar P. Keily, '34, Associate Professor of Meteorology, and two assistants, John C. Johnson, 6–46 (now on the Tufts College staff), and Ralph G. Eldridge of the Division of Industrial Coöperation at M.I.T., have completed a one-month successful operation of their new equipment for measuring cloud drop sizes on Mount Washington, and are piecing together data which give an insight into formation and dispersal of clouds.

The new equipment, developed in the M.I.T. Department of Meteorology under sponsorship of the Geophysical Research Directorate of the Air Force Cambridge Research Center, determines the size and number of drops "smaller than have been measured before," Professor Keily says. It estimates the size and number of droplets as small as 4/10,000ths of an inch in diameter; a cubic inch of ordinary cloud may contain 500,000 such tiny droplets — each less than 1/100 the size of the smallest drops in a drizzly rain.

Clouds are formed when invisible water vapor collects into visible droplets of water, at first very small. These tiny droplets, says Professor Keily, "contain the key to the mystery of how clouds grow."

Such tiny drops, says Professor Keily, are believed to exist for a short time; they must either grow larger or evaporate. The new instrument is important because it will allow meteorologists to study the behavior of very small droplets, closer than ever to these critical sizes which are the true ancestors of raindrops.

Professor Keily and his associates call the new equipment a "variable frequency infrared cloud transmissometer." It consists of an electric eye looking through a part of the cloud in question toward a light source about four feet away. The eye measures the changes in brightness of the light source caused by intervening droplets of the cloud. The light source is invisible "infrared" radiation, chosen because it undergoes large changes on passing through a cloud of very small droplets.

To find the actual sizes of drops, observations of brightness made with the cloud spectrograph must be compared to intensities derived from theoretical data. The theoretical computations, the key to the usefulness of the new device, were originally made on M.I.T.'s large electronic computer, Whirlwind I, under Dr. Johnson's direction.

The cloud spectrograph proved its effectiveness in the fall of 1953 in a month's operation by Mr. Eldridge on Mount Washington — the highest point in New England and one of the stormiest mountains known.

Future development of the cloud spectrograph, Professor Keily and his associates believe, will be toward an air-borne instrument of greater accuracy and dependability than the present experimental model. An air-borne cloud spectrograph, carried on successive passes through a cloud, could get the full life history of that cloud from its first appearance to its maturity as a rainstorm, without any of the side effects which may occur as a cloud passes over a mountaintop. Such a history of the changes in cloud drop size and number is necessary to a full understanding of when and why it rains.

Better Vacuum Tubes

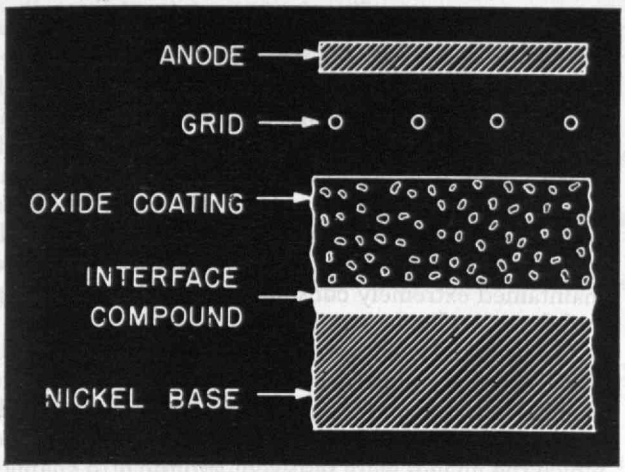
MODERN electronic computers use a great many vacuum tubes for long periods of time under severe conditions of operation. For example, the Institute's Whirlwind I computer uses approximately 6,000 electron tubes which usually operate 24 hours per day. If maintenance operations and "time out" are to be held to reasonably small values, long life and stable operation of tubes under the conditions of operation are necessary.

In most modern tubes, electrons are supplied from an oxide coating affixed to a nickel base which is heated electrically. It has been found that a major cause of failure of such tubes may be traced to the formation of a poorly conducting interface compound, whose location is shown in the diagram as the band between the nickel base and the oxide coating. The slow formation of such an interface compound gradually introduces an impedance between the base and the coating (called the interface impedance), which adversely affects the operation of tubes.

For many years it was known that an interface compound was formed, but only comparatively recently has it been known that, for tubes used in wide-band amplifiers, the interface was responsible for a loss of amplification at frequencies below 100,000 cycles per second without appreciable change in the gain at frequencies of 10 megacycles per second. The effect

Ralph G. Eldridge, of the M.I.T. Division of Industrial Coöperation, at work on the recording equipment of the M.I.T. cloud spectrograph which was recently successfully tested on Mount Washington. The machine determines the size and number of droplets in a cloud passing between the "eyes" of the unit at the right. One eye contains a light source; in the other is an electric eye which measures the changes in brightness caused by intervening cloud droplets.

M.I.T. Photo



Elements of electron tube diagrammatically represented (not to scale) to show how the formation of poorly conducting interface compound acts as additional impedance between anode and nickel base of this cathode.

was observed after several months of operation and was correlated with high silicon content of the amplifier tubes. The connections were established early in 1948 by a group headed by David R. Brown, '47, in the Digital Computer Laboratory, with the co-operation of Professor Wayne B. Nottingham of the Department of Physics. A research program was initiated in 1949 in the Digital Computer Laboratory to uncover basic properties of the cathode interface impedance, with the anticipation that a better understanding of such effects would enable more reliable tubes to be produced. The research has been supported by the Office of Naval Research, and a major part of the work described here has been done by Harold B. Frost, '50, research assistant of the Digital Computer Laboratory.

Because cathode interface impedance cannot be measured by standard equipment, pulse test equipment and accurate bridge techniques were developed for making the required determinations. Vacuum tubes, with different alloys for the cathodes, were placed on life test under various conditions. It was found that high values of cathode interface impedance were formed in tubes operated under cutoff conditions when the base contained more than 0.05 per cent silicon by weight; intermediate values were encountered erratically with alloys having between 0.01 and 0.05 per cent silicon, whereas no interface impedance developed with tubes whose cathode base material contained less than 0.01 per cent silicon.

The interface impedance is not a simple lumped-constant network, but a distributed-constant element. Bridge measurements have shown conclusively that a network with at least four elements is necessary to give a second-order approximation to the interface impedance for a given operating condition. Such a network commonly has two open-circuit time constants between 0.1 and 10 microseconds. It has been found that the interface impedance is nonlinear. The impedance depends largely on cathode temperature (heater voltage), operating conditions (both the level of cathode current and the electrode potentials necessary to obtain the current), and time of current flow, especially the first second or so of operation after a cutoff period.

Progress in Communication

DURING the last months of 1953 and the first few weeks of 1954, four important steps in the progress of electrical communication were announced in quick succession. On November 17, a radio message which flashed from a giant antenna strung across a deep valley in the Cascade Mountains of the state of Washington circled the world to bring all of the far-flung elements of the United States Navy within direct and instant reach of their homeland. In December, the Bell System announced that plans had been completed and work was soon to begin on the construction of a 2,000-mile, underwater, coaxial cable between Nova Scotia and Oban, Scotland, which will provide 36 simultaneous telephone channels between New York and London. Successful recording, on magnetic tape, of television pictures in black and white, as well as in colors, was announced by the Radio Corporation of America shortly thereafter in a development that inaugurates an era of electronic photography, and makes possible the transcription of picture signals for later reproduction without the need of photographic processing. But perhaps the development that will most readily capture public fancy is the announcement, by the Federal Communications Commission, that a compatible system of color television has been approved for commercial use, as a result of industry-wide co-operation in the creation of the necessary standards. It is expected that production models of the first color television receivers should make their appearance about the middle of 1954.

Each of these developments is of major significance, and each has taken anywhere from one to 25 years to bring to fruition. Yet, so accustomed have we become to announcements of significant developments based on science that public comment on such news may be said to be almost conspicuous by its absence.

The Navy's radiotelegraph transmitter at Jim Creek Valley, 55 miles northeast of Seattle with a power rating of 1,200 kilowatts, is the most powerful radio transmitter ever built. This $14,000,000 project took six years to complete and is intended to provide direct and instant communication to naval units in all parts of the world. It operates at the low radio frequencies of 14.5 to 35 kilocycles per second. Most spectacular portion of this high-power station is the antenna system. Ten catenaries, supported by 12 towers each 200 feet high and built along the crests of the ridges 2,700 feet above the floor of the valley, support the zigzag spans, the largest of which is 8,700 feet in length. The antenna, as well as the transmitter, is divided into two units, each half of which may be operated separately and independently. It is interesting to learn that only six minutes elapsed from the time the inauguration message was tapped out at Jim Creek until replies commenced to pour in from naval units in all parts of the world.

A quarter of a century of development — on the part of engineers of the American Telephone and Telegraph Company in the United States and of the British Post Office in England — underlies the technological foundation that will make the fabrication and laying of the transatlantic telephone cable a reality within

a few years. The project, which will cost $35,000,000, is a joint undertaking of the American Telephone and Telegraph Company, the Canadian Overseas Telecommunication Corporation, and the British Post Office. The cable will provide direct telephone communication between New York and London by means of landline from New York to Portland, Maine, microwave radio relay from Portland to Nova Scotia; underwater cable from Nova Scotia to Newfoundland; deep-sea cable from Novia Scotia to Oban, Scotland; and landline circuits from Oban to London. The cable will handle 36 simultaneous conversations, thereby tripling existing radio-telephone circuit capacity. The facilities will be adequate for radio program (music) applications, but will not be adequate for the transmission of television signals.

The deep-sea cable between Nova Scotia and Scotland will employ 100 vacuum tube repeater amplifiers. In each repeater station, which will be one and a half inches in diameter and seven feet long, will be three vacuum tubes. Power for the amplifiers will be carried over coaxial conductors. A major problem in the design of the cable was to develop electron tubes with sufficient reliability as to last years without replacement, and to provide means for by-passing tubes that might fail in service.

The magnetic tape recording of television pictures is expected to play an important role in commercial broadcasting of color television programs. Since no chemical processing is required, the programs may be reproduced as soon as they are recorded, and programs from tape which has served its purpose may be readily erased so that the same tape can be used over and over. In principle, the recording of television signals on magnetic tape is the same as that used for tape recording of sound. However, whereas sound frequencies range from 20 to 20,000 cycles per second, signals for television use must operate up to frequencies at least as high as 4,000,000 cycles per second. Accordingly, it is necessary to increase the speed at which the tape travels from 15 inches per second (the speed used in sound recording) to 30 feet per second; moreover, the speed at which the tape travels must be maintained extremely constant, at both the recording and the reproducing stations.

Radio Corporation of America

W. D. Houghton (left) and Harry F. Olson operating the laboratory equipment on which the first public demonstration of tape recording of both monochrome and color television was made. Messrs. Houghton and Olson head R.C.A.'s seven-man research team which is working toward simple and economical methods of reproducing motion pictures for television broadcasting and home entertainment. The last two racks on the right, in the illustration, are for test purposes and not part of the video tape recorder.

In the initial demonstration, five parallel channels were recorded simultaneously on a half-inch tape. One channel was for sound; one channel was used for each of the three primary colors (red, green, and blue) into which the images were resolved; and the fifth channel was used for synchronizing purposes. Black-and-white television signals can be reproduced on a tape one-quarter inch wide, with but two channels; one for the video signal and one for the audio.

Magnetic tape recording stores the electrical signals directly as they come from the television camera, and neither electronic nor photographic processing is required. Copies can be made for distribution at a cost of $15 per copy for a half-hour, black-and-white program, provided the tape is reused many times. Copies of color television programs can be made at a cost of approximately $20 for a half-hour program. Of course, these figures refer to the cost of recording visual images on tape, and not to the cost of producing the original television programs.

The action of the Federal Communications Commission in approving a "compatible" system of color transmission not only opens up the era of commercial color television, but assures televiewers that they will be able to receive program material from either black and white or color television transmissions. Under the compatible system of television standards, existing television sets can receive color programs in black and white without any changes or additional accessories, whereas the new color television receivers to be built, beginning this year, will be able to receive either color or black-and-white television programs. Of course new color television receivers will be required to utilize full color programs, for the necessary additional circuits and color kinescopes can hardly be added as accessory equipment to existing receivers. By establishing television transmission standards which are compatible, the industry is assured that there will be markets for both black and white as well as color transmissions for many years; furthermore, set owners need not fear sudden obsolescence of their receivers as the result of the introduction of color transmissions.

These, and similar, developments inaugurate new landmarks in the progress of electrical communication; the celebrations which accompanied the opening of each of these new services are tributes, even if silent ones, to those engineers, scientists, administrators, and financiers who have made possible such technological progress. And now that we have such remarkable facilities for communicating ideas, wouldn't it be worth while to examine the quality and intellectual merit of the ideas we have to communicate over these new instrumentalities?

The University and the Community

Universities Have Developed a Whole New Relationship with Agriculture, Industry, Management and Labor That Can Materially Benefit Their Communities

By JAMES R. KILLIAN, JR.

The Review is pleased to present to its readers the text of Dr. Killian's address which was delivered at the inauguration of the Graduate School of Arts and Sciences of Brandeis University. Dr. Killian was the principal speaker at the ceremonies which were held on January 14, 1954.

In behalf of its sister universities, I have the honor of congratulating Brandeis University on the inauguration of its Graduate School of Arts and Sciences and of conveying to you and your associates, President [Abram L.] Sachar, the pleasure we all feel in your progress and in your prospects.

On other occasions I have spoken of the good neighbor policy which prevails among institutions in Greater Boston. Good neighbors welcome *new* good neighbors, and so we delight to see a new graduate school augment the scholarly resources of this community. I like to think of our universities, hospitals, and research organizations as creating together a University of Greater Boston, an entity which is greater than the sum of its parts and which is the more effective because it has no corporate existence except the powerful sense of commonwealth to be found in groups of scholars spontaneously interested in each other's work. Such a spirit pervades this community. A distinguished British scholar, Jacob Bronowski [Carnegie Visiting Professor of History at M.I.T.], recently spent several months in this community, and when he returned to England, he wrote in the London *Observer* that he had never spent so many stimulating evenings with first-rate men "excitedly talking each other's shop." What the biologist calls the "fecundity of aggregates" in speaking of living cells also applies to institutions and groups of scholars. Our commonwealth grows stronger, our scholarship more fecund, through the presence of this vigorous new institution.

An occasion such as this brings other sentiments of satisfaction and anticipation.

Society has invented the university to perpetuate itself and "to create its future." Practical planning and prudence thus motivate the founding and building of a university. But there is something more. The building of a noble university is an expression of the generous impulses, the high purposes, and the soaring aspirations of a free society. The university serves the present but it does this better if it preoccupies itself with the possibilities of the future.

These practical and altruistic aims have been exemplified in the building of Brandeis and in the forming of the graduate school we inaugurate tonight. You who have founded and are building this new institution should sense and savor the event taking place. Once it is successfully delivered, a university has a greater life expectancy than almost any other human institution. We can consequently sense the long reach of this occasion by anticipating how some future historian of Brandeis will laboriously reconstruct out of antiquity some measure of the temerity, the sweat, and the prescience which characterize the founding of Brandeis – and its founders.

Formal graduate study in the English-speaking world has developed largely in the span of one generation. In 1870 there were less than 50 graduate students in America. Today they number over 80,000. In his *Unforgotten Years*,* Logan Pearsall Smith recalls how research was viewed with suspicion and contempt at Oxford University in the 1880's. Benjamin Jowett, the redoubtable master of Balliol College and founder of its tutorial system, described research as a "mere excuse for idleness; it has never achieved, and will never achieve, any results of the slightest value." When Smith challenged this statement, Jowett demanded an example. Smith could only recall the then recent discovery that a tap on the kneecap would cause the patient to give an involuntary kick, and that this provided one piece of evidence of his neurological health.

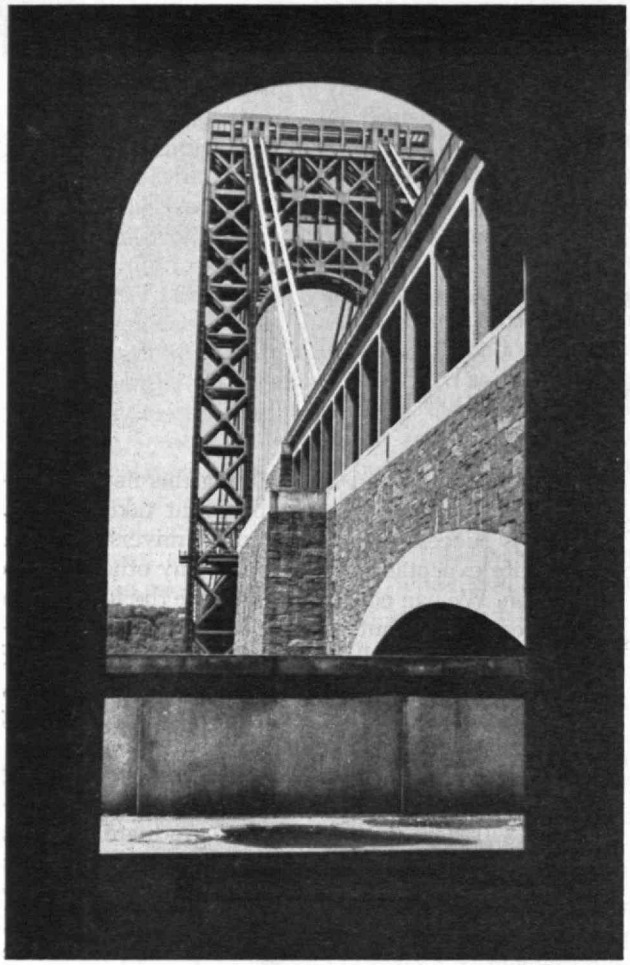
"I don't believe a word of it," said Jowett. "Just give my knee a tap."

Smith obliged, whereupon the professorial leg reacted with a vigor which surprised Smith and astonished Jowett.

This involuntary jerk of Jowett's academic leg symbolically kicked open the door to a new era of advanced education. Already in Germany and the United States, as indeed it had in England, graduate study had taken root in the universities. The universities were quick to demonstrate that they had special advantages for the conduct of research, and that research was an essential technique of advanced education. We sometimes forget that the university was not always the habitat of basic research, and we might well remember that it could move into other kinds of institutions if universities ceased to be a favorable environment for it.

An academic cynic, thinking perhaps of Jowett and his times, once remarked that in a university, "nothing must ever be done for the first time." You of Brandeis who are doing something for the first time

* Boston: Little, Brown and Company, 1939.



Ward Allan Howe

Our universities are important partners of management and labor in maintaining a vigorous economy.

every day must have a joyous sense of the free and open road. We who know something of the built-in obduracy of older institutions can but envy you the happy state of having so little of the past to obstruct and complicate the future. Perhaps this explains Gilman's great achievement in starting American graduate study when he started Johns Hopkins, but it should also be added that no institution with a powerful graduate school can easily remain static and tradition-bound.

With these sentiments, anticipations, and good wishes, I hail your new graduate school and express the neighborly hope that it will prosper.

In the context of the Twentieth Century, our universities have assumed new duties and responsibilities unknown to them a generation ago. Today they are being asked to serve the nation, their states, and their communities with a range of services that removes them decisively from the role of ivory towers, insulated from reality. Let me be specific.

Prior to World War II, universities had done a negligible amount of research for the federal government. During the war the largest military and weapons research laboratory ever essembled – a laboratory in this area – was managed by an educational institution. The great atomic bomb laboratory at Los Alamos was, and still is, managed by a university, and at the present time many of the nation's major research laboratories and projects are handled by universities.

The impact of the cold war has made it necessary to mobilize our scholarly resources so that we may better understand Communism and counter its threat. University research centers of many kinds, especially those devoted to international affairs, have been called upon by the nation to help, and have been making significant contributions. Scholars, organized by the universities in this area, have played an important part in fighting Communism.

Our universities have developed a whole new relationship with agriculture, industry, management, and labor. Experiment stations aid the farmer and the small company, scientific and engineering faculty members serve as consultants to industry, the medical and public-health schools work directly with community public health agencies and hospitals. Faculties of law, business, and education are closely articulated with actual practice in their fields. The social scientist, the architectural professor, and the planner are in great demand as advisers to government and to all manner of community activities.

In one institution in this community, an estimate has shown that faculty members, on the average, spend a quarter of their time in activities of a public-service kind and for which neither they nor their institution receive any compensation. This means a contribution to the public service by this one institution of about $1,000,000 a year in salaries paid. Multiply this in proper proportion by all the institutions in this area, and you begin to get a measure of this total public service. This kind of service is a part of the responsibility of the modern American university.

The university's new responsibilities for national and community service have been recently documented in a study conducted by the New York State Citizens Council. As summarized by Benjamin Fine of the New York *Times*, this study identified four methods whereby colleges and communities achieve a mutually productive co-operation. These are:

(1) Use by the college of the skills, abilities and education of persons within the community for the purpose of enriching the educational process.

(2) Use by the college of the community as a laboratory for the purpose of advancing the educational process.

(3) Initiation by the college of various community undertakings in which the college functions merely as one of many agencies within the community.

(4) Development by college and community of mutually beneficial undertakings.

This kind of co-operation is obviously a two-way street. Certainly the university finds this new relationship productive, and as a result the scholar comes to have a heightened sense of his usefulness.

With this new range of university-community relations in mind, I venture next to offer a close-up of the ways our local institutions benefit the economic life of this community. Lest this seem to be a narrowly provincial view to our guests from other parts of the country, I hasten to make clear that I know that similar claims can be made for other sections for their institutions. I also parochially limit my examination to science and technology, since I know these fields best. My other excuse is that Brandeis is also celebrating a large gift for a new science building.

I submit that in New England, in Massachusetts, and in Metropolitan Boston, our universities are important partners of management and labor in maintaining a vigorous economy. Out of the universities are coming directly new products, new industries, new wealth. Through research, the universities are helping this region to replace lost industry by using advanced technology and know-how to create new industry. They also help existing industry achieve new products and new efficiency both in technology and in management.

They supply well-educated individuals with entrepreneurial interests who understand the arts of management, the use of research and new knowledge. They are the sources of the raw material of ideas and they are stockpiles of information.

Let me give some case histories by looking first at Brandeis' own home, the Waltham-Watertown area. Among its many growing companies is the Raytheon Manufacturing Company which employs about 18,000 people in the state. One of the founders of Raytheon was a professor and a dean of engineering educated at Tufts and at M.I.T. This same man directed the greatest war research program in history. His name: Vannevar Bush, '16. During World War II, when we were struggling to develop adequate radar, Raytheon, working in partnership with an educational institution, made a major contribution, and as a consequence stands today as one of the industrial leaders in this field.

Or take another example, the Barry Corporation, which has been created since World War II and which now does a business of over $5,000,000 a year. The founders of the company, and the product upon which it is built, both came out of a nearby wartime university research laboratory.

Let us look next at my home city, Cambridge. Radcliffe, Harvard, and M.I.T. together form the city's largest employer of people with a total on their payrolls of nearly 14,000. The combined annual payroll of these three institutions is more than $35,000,000. Their combined annual expenditures are $85,000,000. This past year they had under construction new facilities totaling $10,000,000. Much of the new money is drawn from outside the state. I estimate that two thirds of the total capital resources of M.I.T. were attracted from outside Massachusetts. To put it one way, our local institutions import money and men and export ideas. For example, the recently established National Science Foundation Fellowships point up the drawing power of our local institutions. These fellowships, awarded to young scientists all over the nation, permit their recipients to study where they choose. More than 20 per cent of them have elected to study in Greater Boston; and I am pleased that my own institution draws the largest number of any institution in the country.

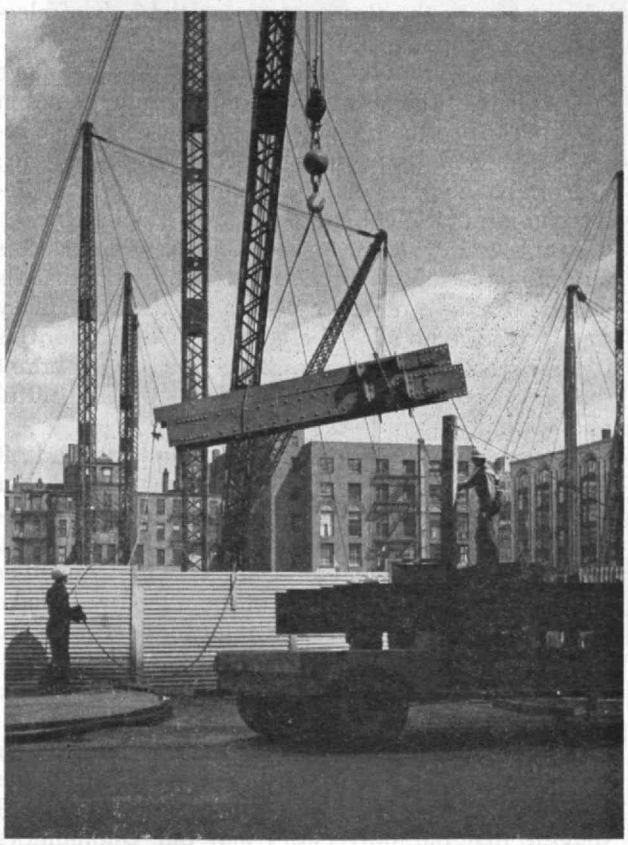
Let us look next at Metropolitan Boston. In the past four years its educational institutions have been the major factor in the location here of government electronic research facilities costing $11,000,000 and employing 2,000 men and women. The research resources of these institutions helped also in attracting here the new Quartermaster Research Laboratory. During World War II a local college had the responsibility for one of the major scientific efforts of the war and for the expenditure of $125,000,000 for research. At the present time, institutions of Greater Boston have mobilized hundreds of scientists who are working unselfishly, quietly, and patriotically to give the nation stronger defenses at lower cost. Greater Boston has become one of the nation's largest, and most important, research centers for defense research.

Finally, let us look at the universities as an all-New England resource.

In a recent survey of 41,000 American scientists, 14 per cent were shown to have received their Ph.D. degrees in New England and 12.5 per cent their bachelor's degrees. Since only 6.3 per cent of the population of the country resides in New England, these are impressive proportions. They reflect the importance of our graduate schools and the research they undertake. The excellence of the region in the scientific personnel it attracts and maintains is shown in its share of the total members of the nation's top scientific society. Twenty-one per cent of the members of the National Academy of Sciences work in New England, and of these, over 90 per cent are in the region's colleges and universities.

In this high concentration of scientific talent, we find one of the reasons why in 1950, New England institutions were responsible for nearly one third of all the research undertaken by colleges and universities for the military services.

As reported in the Boston *Herald* of Sunday, January 10, in New England "the Air Force has awarded research contracts worth about eighty-two million



Raymond E. Hanson

. . . the evidence is clear that New England is witnessing a new industrial revolution, and that its universities have played a part in furthering it . . . it is important that we encourage and further develop this fruitful relationship.

dollars. 'New England,' an Air Force officer said, 'seems to have become our most important development area in the country.' "

As the report of The Committee of New England recently pointed out, this region possesses at least 46 colleges and universities that furnish technical training and operate research laboratories. These institutions have been responsible, at least in part, for the location in New England of many new companies. As this report points out, "During the last few years, a whole new generation of research-based new enterprises has come into existence, frequently to exploit new scientific and engineering knowledge acquired during World War II. A large number of such companies have settled and grown near their spawning ground in Cambridge . . ." By spawning ground is meant what I have already described as the University of Greater Boston as well as the research institutions along the Charles River. This is one of the greatest concentrations of scientific, engineering, and research talent in the world. In any terms, this concentration of research is a community, a state, a regional, and a national resource of the first magnitude.

Let me turn next to another recent report, *A Survey of Industrial Opportunities in New England*, by Arthur D. Little, Inc. "The high quality of research in New England," notes this report, "has concentrated an increasing number of new firms around its research centers . . . One of the unique assets for the machinery industry in New England is the concentration of technological knowledge in universities and private research corporations . . . [university] and research laboratories in the Boston area are the hub of electronics developments."

And so these reports document my thesis. We have only to look at the new lexicon of corporate names in this area to see the impact of university scientific research and high technology: High Voltage, Inc.; Tracerlab, Inc.; Photon, Inc.; Polaroid; National Research Corporation; Ultrasonics, Inc.; Ionics, Inc.

I think the evidence is clear that New England is witnessing a new industrial revolution, and that its universities have played a part in furthering it. They should receive no special credit for doing so, for this is part of their public responsibility, but it is important that we encourage and further develop this fruitful relationship.

With these resources and these trends at work, it is important that we not sell New England short. For the same reason our New England colleges and universities should not be sold short. In the furtherance of New England's welfare, our universities, together with the other great agencies of the region, can make an increasing contribution to the economic stability and the prosperity of the region.

The biologists have a scientific term which they use to describe the habitual living together, or interdependence, of organisms of different species. This term is symbiosis, and it is applied to a relationship that is beneficial to both organisms and harmful to none. I suggest that our universities and our communities stand in a symbiotic relationship to each other, each contributing to the strength and welfare of the other.

Certainly it is true that New England has provided a benign environment for higher education. It is unthinkable that it would not do so in the future, but we must always be alert to maintain the beneficent relationship which I have been describing. We must never allow our institutions or our community to find themselves at a disadvantage in attracting and holding first-rate minds.

New England universities have grown and flourished because their roots are in fertile soil. They have attracted and held first-rate teachers and creative scholars because these men found the environment here one of freedom, dignity, and benignity. Under these conditions there could be a confluence of all those subtle and impalpable factors which enable a group of scholars to make a great university where otherwise they might constitute a mediocre one.

We as citizens, and we as educators, ought never to underestimate the importance of this spirit, this climate, this priceless ingredient of a great university and a great community. This ingredient becomes inert in an atmosphere of suspicion, suppression, or long-sustained tension. It flourishes when there is mutual confidence and a sense of all-pervading integrity. It rests upon a ready acceptance of the duties of enlightened and responsible citizenship. It rests upon tolerance and freedom and forthrightness.

This kind of relationship between the scholar and the community has been traditional in this region. If we can maintain it unimpaired, our community, universities, and nation will profit and grow in greatness.

In stressing the economic impact of our educational institutions, I have been dealing with a by-product of education. The prime and overriding responsibility of educational institutions is to *educate* – to advance our understanding of ourselves and to extend the reach of the human spirit. The university cannot serve the community or the economy effectively unless it does these *first* things well. Let me conclude by reiterating my conviction that the university must seek to exemplify the good, the true, and the beautiful if it is to do these other things well. Any report card on the universities must carry marks showing deficiencies and failures, but it is my observation that these deficiencies and failures are more in execution than they are in aims and aspirations.

Robert Louis Stevenson once spoke of his grandfather, the great civil engineer, as having used a "transcendental coefficient" in the design of all his great structures. This enabled him to build into them an exceptional measure of beauty and permanence along with their usefulness.

Our universities must have some such transcendental coefficient implicit in their design. They can never be great institutions by being merely utilitarian. A great faculty has competent teachers, brilliant scholars, creative specialists. But it has something more. It has men and women who teach with zest, dedication, and art. It finds and encourages men and women who have the rare temperament and personality that emanates goodness and wisdom. The teacher, the scholar, and the researcher should be dedicated men – men committed to the ideal aims of mind and spirit. They should be committed to the highest ethical and moral standards of our society. Their university must be the embodiment of the first-rate in all these things.

(*Concluded on page 262*)

The present critical situation of the teaching profession is a matter of grave concern to far-sighted individuals and organizations, as has been reported in the pages of The Review as recently as last month. (See "Science in High Schools," February, 1954, page 187.)

The Institute's Administration is keenly alert to the need for developing effective teachers. Since 1949, under a program of Westinghouse fellowships, M.I.T. has offered courses of instruction to approximately 50 science high school teachers who wish to improve their professional proficiency and become more familiar with the latest progress in the physical and the biological sciences. In addition, in a joint program with Harvard University, M.I.T. now offers a five-year program for those who wish to follow careers in science teaching. In this program, students receive their science training at M.I.T. and their pedagogical training at Harvard.

But the inspiration and stimulation which today's professors can instill in their students are probably the greatest contributions that can be made to the training of science teachers – as well as to scientists and engineers. It is a source of gratification, therefore, to learn the esteem with which one of Boston's newspapers regards the Institute's teaching. The following article by a staff writer of The Christian Science Monitor *was printed on December 23, 1953, and is reprinted in full (along with two of the* Monitor's *photographs) with the permission of that newspaper. – Ed.*

Professor Makes Physics Fabulous at M.I.T.

"Outstanding teaching being done in the Greater Boston area" discussed by Boston newspaper recognizing teacher shortage

By MARY HANDY

"He's really fabulous," the freshman whispered, pointing at his physics professor. As he spoke the whole lecture hall at the Massachusetts Institute of Technology exploded in a roar of laughter. Four hundred of the nation's promising young natural-scientists-to-be doubled up with mirth.

Their laughter was applause for one of the most popular MIT professors – and a man whose approach to teaching would be outstanding anywhere.

Dr. Hans Mueller, beloved by Tech students and graduates, was in the midst of a virtuoso performance.

Wildly swinging his arms he was forcing his body around, on the revolving platform on which he stood. His purpose: to illustrate the time-honored law of conservation of momentum. He was making it real, and vivid, even funny – so that his students, years hence, would remember it.

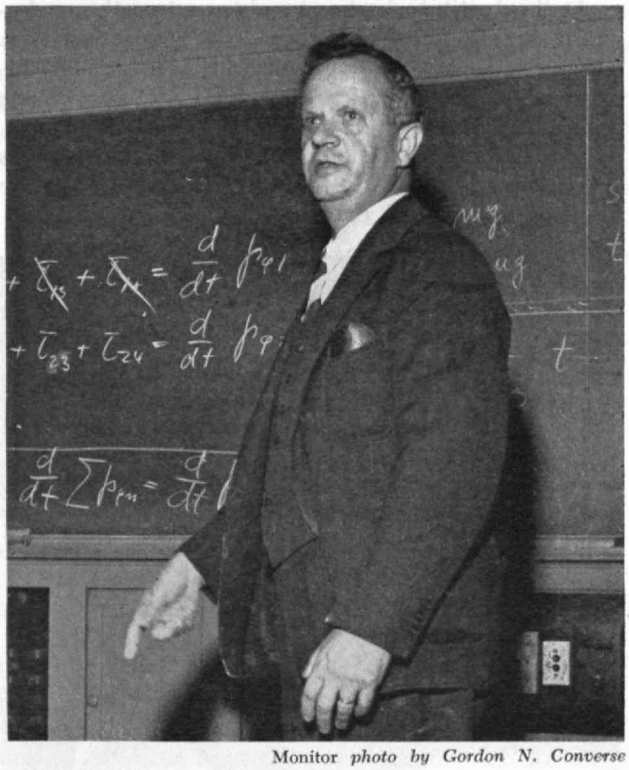
Like Dropping a Cat

"It's the same thing when you drop a cat," he called out in his marked Swiss accent. "If you drop a cat upside down it will land on its feet. Why? The tail. It will use its tail to swing itself over the same way I am driving myself around with my arms."

He rushed to the blackboard and chalked up a ridiculous picture of a cat upside down. Then, as the laughter subsided, he continued with equations.

This is all in a day's work for Dr. Mueller. All part of his conviction that teachers must put more of themselves into their classroom performance. Part of his conviction that physics, instead of being dull and hard, can be made tremendously alive through a more theatrical presentation.

"I'm a ham actor – and it's hard work," he explains, laughing.



Monitor *photo by Gordon N. Converse*

Hans Mueller

. . . Professor of Physics, covers the blackboards in Huntington Hall during a physics lecture to Technology freshmen.

Physics Workout

A physics lecture, Dr. Mueller's definition, includes: filling the 40-foot blackboard with equations at what seems breakneck speed to an outsider; jumping back and forth as he uses the experimental equip-

ment; speaking seriously to the front row of students to emphasize a point; running back to the board and writing up a new set of equations; laughing with his pupils as one of his planned jokes succeeds.

After his 50-minute performance – con brio and staccato – after the 400 students had pushed and flocked out into the corridors, Dr. Mueller chuckled.

"I told them a cat rights itself in the air by using its tail. You wait. Somebody's going to come and ask me about a bob cat." He was enjoying the class as much as his students.

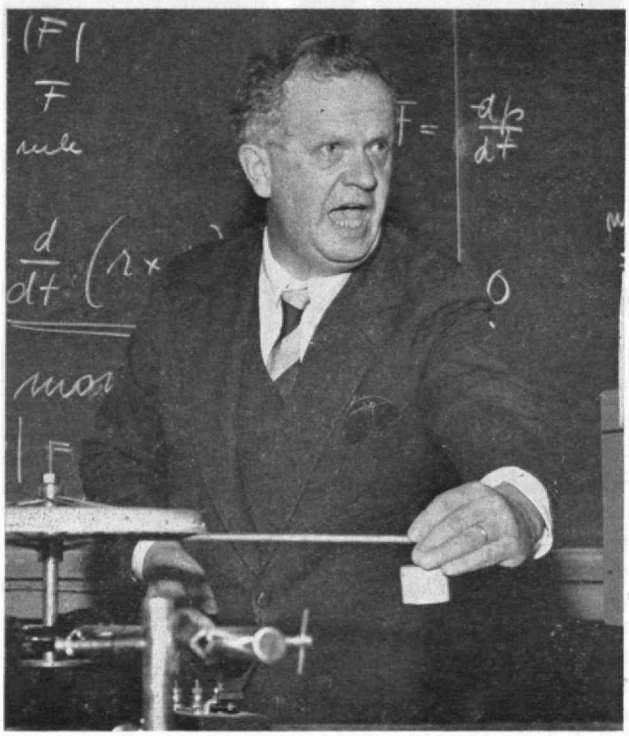
Job Seen as Challenge

Later, in his office, where desks are piled high with manuscripts of the new book he is writing, Dr. Mueller discussed his challenge as director of freshman physics at this world-renowned technical institute.

"This is a selected crowd here at M.I.T. Fifteen years from now these boys will, in substantial measure, decide America's industrial and technical development."

Dr. Mueller is a Swiss farmer's son. Soon after completing his studies at the Swiss Institute of Technology he came to the United States. He has been at M.I.T. for 28 years. But in his spare time and during summers, he and his wife and daughter live on a little farm in Massachusetts.

At the Institute he has taught most of the undergraduate and many of the graduate physics courses. He is well-known among natural scientists for his work in the field of optics. Recently, by his own choice he has taken charge of the freshman physics course. Practically every student who enters M.I.T. takes physics – making it a kind of introduction to the level of work M.I.T. expects.



Monitor *photo by Gordon N. Converse*

Demonstration, as well as mathematics, by Professor Mueller forms part of instruction in freshman physics at M.I.T.

Foundation Sought

"As they arrive here we want to give these boys a foundation of three centuries of philosophy of science. The technical applications are not important at the beginning. We want to keep an awakened interest in the basic principles," he says.

"It's not the amount we teach these boys that matters – it's the thoroughness. It is more important for a man to understand thoroughly what he has learned, than to try to grasp a great deal poorly. We must teach these boys to walk before we teach them to dance."

As director of freshman physics, Dr. Mueller keeps his door wide open to all first-year students. They flock to him with problems ranging from mathematical formulas to loneliness.

"There's a lot of tension among freshmen today. We try to relieve it by giving more and more personal attention." It is plain that his kindness and genuine interest have helped many a student over a rough spot.

Experience Held Vital

Nor is he critical of slow learners. "Boys grow up at different rates. Sometimes the slow freshmen remember the most. You need tremendous experience to help each boy in his own individual way."

As for his theatrical presentations, they are all purposefully worked out. "We teachers must create enthusiasm. The only way is to be enthusiastic yourself. I have to live it all through with them."

And Dr. Mueller does "live it all through" with his students to an exceptional degree. He companions them in their enthusiasms both in and out of class.

During the recent presidential campaign when Tech boys were actively putting forward the comic-strip possum, Pogo, as their candidate, Dr. Mueller, too, wore a Pogo button under his lapel.

He recognizes teaching as one of the most important influences on young persons. He remembers how deeply his professors at the Swiss Institute of Technology influenced his own career.

Recalls Own Teachers

Vividly he tells of eating dinner with three professors all of whom since have won Nobel prizes. These men were physicists. It was what they said to each other at the dinner table, and what they said to him as an eager, young student that influenced him to become a physicist.

"One of them related how the laws of physics and mathematics had seemed a revelation," Dr. Mueller relates. "Another talked of the practical applications of physics. He said he was fascinated with being a physicist because through inventions it makes things easier for people.

"And the third simply said he got an awful lot of fun and kick out of it."

The interest that these professors showed in him and their obvious satisfaction from physics led Dr. Mueller to follow their example.

"It's an adventure," he says. "Even after 28 years of teaching I keep experimenting all the time."

Mining and Mineral Deposits
IN NEW ENGLAND

By CARLE R. HAYWARD

MINING Engineering, as indicated by its designation – Course III – was one of the earliest courses established at M.I.T. When it was dropped from the curriculum in 1940, one of the arguments for the action was "Why teach mining in New England where there are no mines?" It is true that few mines are at present operating in New England and it is not the purpose of this paper to argue regarding the wisdom of dropping the Mining Course, although the action came as a shock to many of the older Alumni. The bibliography at the end of this article (page 274) will show, however, that there have been an astonishing number of mining operations in this area, some mere prospects and others of considerable size which have attracted attention and stimulated investment from colonial times to the present day. The writer, a graduate of old Course III, is presenting herewith a summary of the information given in these references together with some personal comments.

New England may be classed as a "ghost" mining camp but there are some spots which felt for a brief period the thrills of a mining boom. Although it must be admitted that most of the operations did not prove to be profitable, it is a matter of record that mines in New England have been opened on mineral deposits containing the following metals: gold, silver, iron, copper, lead, zinc, nickel, tin, antimony, beryllium, bismuth, cadmium, chromium, cobalt, calcium, magnesium, manganese, molybdenum, titanium, and tungsten. It is doubtful if any other area of similar size in the United States has produced 20 metals.

Coal, graphite and sulfur have also been produced in New England and such nonmetallic minerals as asbestos, mica, feldspar, and garnet. In addition to these, the allied operations of quarrying granite, marble, and slate have been profitably carried out in many localities. Up to 1870, Vermont led the states as a producer of copper and in the early days of the Nineteenth Century Connecticut was fourth as a producer of iron.

In view of the above facts it is not surprising that a Course in Mining Engineering was established at M.I.T. Many graduates of this Course have had distinguished careers.

One of the most important figures in the early mining history of New England was John Winthrop, Jr., son of the governor of Massachusetts Bay. He went to England in 1641 and enlisted help to form the "Company of Undertakers for the Iron Works in New England." In 1643 he returned with an initial capital subscription of 1,000 pounds, tools, and workmen. Included in the latter were Joseph Jenks who became chief engineer of the iron works at Saugus, and Henry and James Leonard who developed the Taunton Iron Works. Winthrop later went to Connecticut and in due time became governor of that colony. He received grants for the development of several mining properties in Connecticut and the graphite mines in Sturbridge, just across the border in Massachusetts.

Most of the early mining operations in New England were confined to excavating the bog iron ore from the numerous localities where it was found, and hauling it to the forges and bloomeries where it was reduced to semifused masses of crude metallic iron which were later hammered into useful articles. Later, purer forms of iron ore were mined and smelted in blast furnaces with charcoal fuel to form molten pig iron used for castings. As time went on, veins containing numerous other metallic minerals were found whose development required hard-rock mining. The ore was then treated in various ways to produce the different metals.

Although the mining and treatment of these minerals might well be discussed under the separate headings of the metals concerned, it will probably avoid confusion if the operations in the six New England states be taken in order, with mention of the different mining activities which have been recorded within the borders of each. This plan will therefore be followed in this article.

Maine

Mining operations in Maine were of little importance until about the middle of the Nineteenth Century. A few bloomery forges, operating on bog iron ore, are recorded in York County during and immediately following the American Revolution but the first operations of any importance were a small iron blast furnace at Shapleigh, York County, in 1846, and the Katahdin Iron Works built in the same year in Piscataquis County. The Katahdin works produced 2,000 to 15,000 tons per year until it closed in 1890. These two furnaces used the iron minerals, magnetite and limonite, which have fewer impurities than bog ore; the product was pig iron instead of blooms.

Considerable iron ore, high in manganese, exists in Aroostook County but it is interesting as a possible future source of manganese rather than as an iron ore. This deposit has recently been studied by the U.S. Bureau of Mines but no economical method for extracting the manganese has yet been found.

Lead ore – containing also copper, zinc, gold, and silver – was found near Lubec, Washington County, in 1832. The property was worked a short time, then shut down. In the early 1870's it was reopened for a short time and operated by more improved methods but finally was abandoned.

Maine experienced a mining boom, beginning in 1879, which lasted about two years. A graphic account

is given* by Virginia Chase Perkins. Several prospects showing copper, lead, and zinc, containing varying amounts of gold and silver had been opened along the Maine coast from Blue Hill to Calais. In 1879 a man named William Stewart, a native of Maine who had gone to California in the gold rush days, returned to Maine and naturally visited some of the mining prospects in Acton, Hampton, Sullivan, Franklin, and Hancock. In a report on these districts he stated: "By merest accident I floated into mining regions of Eastern Maine and after fatiguing exploration of several of the most important mining districts in the counties of Penobscot and Hancock I am prepared to assert that this is of a verity a promising silver-bearing region. I can assure you that I have recently examined mines which for fertility of silver will compare favorably with first class mining properties in Colorado and Nevada."

Less than eight weeks after Stewart's report was published, 600 men were employed at Blue Hill, 550 at Acton, and 1,000 in the Sullivan district. The latter produced considerable excitement because of the high silver content of the ores there. The deposit was discovered in 1877 and showed minerals of lead, zinc, and copper which carried much of the silver, although some metallic silver was also found. The value of the ore averaged about $100 per ton. Several shafts were excavated on the property, one of which was 190 feet in depth. Fifty companies were incorporated in this general area with a total capital of $25,000,000.

The wide interest taken in the mining operations in Maine is indicated by the following quotation copied from *Mines of Maine* written by F. L. Bartlett, State Assayer for Maine.[23]

It is safe to say that not one in fifty of the readers of the Herald has anything like an accurate idea of the discoveries which have been made, the work which has been done and the bright prospects of the future which exist in eastern Maine. – **Boston *Herald*.**

We have personally visited Sullivan and feel sure that the correspondent of the Boston Herald does not overrate the value of these extraordinary eastern silver mines. – **From an editorial in *Mining Record*, New York.**

Maine has been settled so many years and been accessible, that to assert that it possesses gold, silver and copper mines which promise in the not very remote future to prove sources of wealth greater than all its other industries, is to invite disbelief and ridicule yet we believe such to be the fact. – ***The Economist*, Boston.**

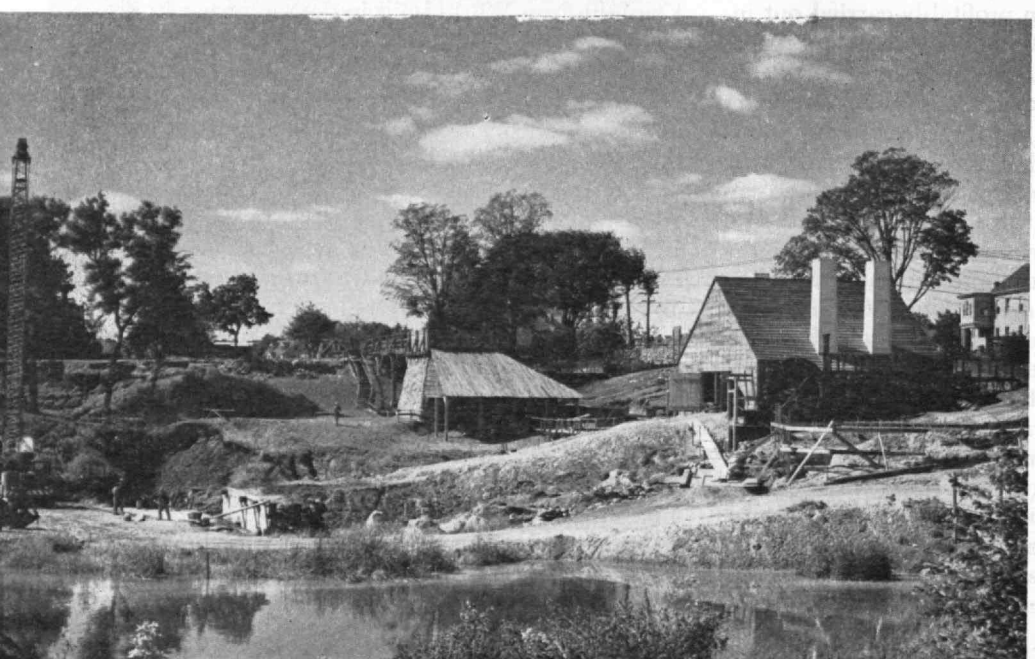
If mineral veins like these had been discovered in some remote new district in Colorado, in six months' time a settlement of some five or ten thousand people would have sprung up full of speculators and miners. – **Editorial, New York *Tribune*.**

The Wall Street News, Boston Advertiser, Chicago Mining Journal, Portland Transcript and many other leading papers commented on the mining industry in Maine as being of good promise and predicted favorable results.

Bartlett states: "Mining men of great and varied experience from the oldest mining districts of the Pacific coast have come and settled in our midst and are showing their honest belief in the value of our mineral deposits by spending their time and money in developing them." Bartlett also quotes W. F. Stewart of Virginia City, Nev., as follows: "The developments made during the past three years in the various mining locations at the Blue Hill district furnish indubitable assurance that the owners of those properties are on the verge of realizing priceless bonanzas of precious and useful metals."

The *Mining Journal* began publication in Bangor and reported on the excitement in the mineralized districts. At Scurry the inhabitants were said to scan with eagle eye every ledge and crevice. At Isle au Haut every man and boy had his pockets filled with rocks. At South Waldoboro wonderful discoveries were reported daily. At Round Pond the women were leaving their kitchens to go prospecting. All over the lower part of the state, property owners blasted ledges and formed mining companies without waiting to learn the results of assays. Farms sold for exorbitant prices. Men came to Maine mines from all over the United States and even from Wales, Cornwall, and Sweden. By April, 1880, there were 123 incorpo-

* For numbered references please see Bibliography at end of article, page 274.



Richard Merrill

Through the courtesy of the First Iron Works Association, restoration work now in progress is illustrated, which shows partly restored furnace at back center and overshot type of water wheel at right. This wheel, which furnished power for the furnace bellows and for other purposes, was recovered in a fair state of preservation after remaining buried for more than 200 years.

rated companies and 48 privately owned. Some of the companies equipped their mines elaborately with little basis for the expenditures.

The most important property in the region was the Douglas Mine at Blue Hill, the richest copper mine in the state. The management spent nearly $12,000 in 1878 and their operations attracted wide attention. The water front was busy, and since the mine was close to the harbor, excursion steamers from various coastal cities brought numerous sight-seers. The sulfide ore produced was roasted in heaps near the mine with evolution of clouds of sulfur dioxide gas. The product from roasting was then smelted to produce copper.

The mines of Maine produced about 5,000 ounces of silver during the boom. The crash began in April, 1880, and in 1881 only 35 mines remained in operation. In May, 1883, the Douglas Mine was the only property being worked and in August, 1888, it was sold at auction for $75,000 but not reopened. From 1878 to 1883 it had produced about 2,000,000 pounds of copper valued at about $300,000.

In 1917 when copper prices were unusually high, due to World War I, the American Smelting and Refining Company took over the Douglas Mine, installed modern concentrating machinery for treating the ore, and shipped the concentrates to Perth Amboy, N. J., but this operation stopped when the price of copper fell at the close of the war. In 1948 the U. S. Bureau of Mines explored the property with diamond drills but no significant mineralization was found. It has been reported that a large sulfur company is investigating this property with a view to extracting the sulfur and recovering the copper as a by-product.

Another property which for a time seemed attractive was at Cape Rosier. The ore contained about 20 per cent zinc, 2.8 per cent copper, and some lead. About 10,000 tons were produced but the operations proved to be unprofitable. The property was explored with diamond drills in 1940–1941 by the St. Joseph Lead Company, and in 1942 by the U. S. Bureau of Mines but the results were not encouraging. The mine at Deer Isle is another of the group which contains sulfides of zinc, lead, and copper.

Maine has several properties where the mineral, molybdenite, is found. This is the sulfide mineral of molybdenum from which nearly all of that metal is produced. The most important deposit in Maine is at Catherine Hill in Hancock County and other deposits exist at Brunswick and at Crocker Hill but none is of great importance.

The mineral, beryl, which is the only important source of beryllium, is found in scattered points in Maine and is occasionally mined commercially though in small quantities. At Vanceboro, near the New Brunswick border, an antimony mine was operated in the early Nineteenth Century. Traces of nickel and cobalt have also been found in several places but not in sufficient quantity to stimulate mining.

In addition to the gold which is present in some of the sulfide veins previously discussed, placer gold has been recovered from the streams flowing into the Rangeley Lakes, from head waters of the Kennebec and from the head waters of the St. John River.

While these notes were being assembled, the May, 1953, number of *Engineering and Mining Journal* appeared with the story of finding a new ore deposit in New Brunswick. This district is an extension of the same geological structures as occur in Maine and the story of its discovery and exploitation sounds strangely like the discovery of the Maine deposits, as will be noted from the following extract from the *Engineering and Mining Journal* article.

Canada's Newest base metal show, most impressive of its kind in the past two decades, will probably change the mining history of a whole province.

It seems slated, also, to focus new public attention on the northern end of the Appalachian Shield; long known as host to a great store of mineral wealth, but neglected (except for the efforts of a few big companies) for a long time.

Time must elapse before its potential can be known. In the meantime it is clear that at least one major mine will be established; for Brunswick Mining and Smelting Corp., owner of the known deposit, has in six months outlined by drilling at least 30-million tons with gross value of considerable more than $750-million in zinc, lead, silver, tin, pyrite, and copper.

An open-pit mining operation is visualized with mill capacity of 5,000 tons daily. Profits, needless to say, should be substantial.

Seldom, even in mine-conscious Canada, has a new find fired public imagination to a similar extent. Though it's not yet four months since the news became known, New Brunswick has been the scene of an unprecedented staking rush. Some 30,000 claims have been staked in a frenzied surge that has spread through almost all parts of the province. There has been time yet for exploratory work on only a dozen or so properties; and the coming summer is sure to see a wave of prospecting, surveying, and drilling such as no Maritime province has ever witnessed.

The work will be well warranted. The prizes could be tremendous. The Brunswick mine alone could be big enough to raise New Brunswick a notch or two in its rank among the Canadian provinces. Last year its mineral output, mostly coal, was about $12 million, or not quite 1 per cent of the country's total. It's not difficult to visualize this one mine more than doubling that amount.

New Hampshire

Iron of sufficient quality to justify shipments to England was discovered near Portsmouth in 1634. In 1672 the Massachusetts General Court granted the town of Portsmouth, in return for a contribution to Harvard, a six-mile tract of land at the head waters of the Lamber Eel Run for an iron works.

From 1719 to 1735 bog iron ore was treated in several bloomeries, and in 1791 iron works were mentioned at Exeter. From 1795 to 1800 a furnace at Winchester smelted magnetite ore and in 1805 magnetite ore from Lisbon was smelted at Franconia. In 1808 the Haverhill and Franconia Manufacturing Company was incorporated and operated until 1865, using cold blast furnaces until 1844 and then furnaces using hot blast.

Small forges for treating bog ore have been mentioned as operating in Bath, Bradford, Concord, Deerfield, and Tamworth. Lead and zinc minerals are found at many places in New Hampshire.

A mine near Madison, Carroll County, containing a complex sulfide ore of copper, lead, and zinc was

discovered in 1826 and had an irregular history of production. Previous to 1840 a shaft was sunk on this property to a depth of 40 feet, and 15 barrels of picked lead ore were shipped to Baltimore. The vein was reported to be about six feet wide but sparsely mineralized with lead and zinc sulfides. The mine was closed for a time but reopened in 1870 and a mill was erected to concentrate the ore. A crew of 25 men was employed for a short time. During World War I the New Jersey Zinc Company operated the property for six months.

In 1846 a lead mine was opened at Shelburne, Coos County, and a shaft was sunk 275 feet deep. In addition to lead sulfide, there were sulfides of copper and zinc present. There was some rich ore but its occurrence was spotty.

The Warren Zinc Mine in Grafton County has had a succession of owners and several periods of operation since its discovery sometime previous to 1844. Between 1900 and 1904 the shaft was sunk to 400 feet on the incline, and in 1914 the depth was increased to 600 feet. This property still attracts attention in times of high metal prices.

Veins carrying copper sulfide occur in the Gardner Mountain section of Grafton County but the only copper mine of interest is the Milan Mine in Coos County. It was discovered in the early 1870's and was worked steadily until 1886 with a monthly output reaching 2,600 tons of ore. It was reopened for a brief period in 1895 and again from 1907 to 1910. In 1938 the property was acquired by Ventures, Ltd. of Canada. It was explored by diamond drilling in 1948.

Gold was discovered in New Hampshire in 1854 and in 1866 active gold-mining operations were being carried on near Lisbon, using stamp mills for crushing the ore. There is also some record of placer deposits. A total of $50,000 in gold was shipped to the United States mint over a short period of years.

The area near Keene has been an important producer of feldspar and mica, and some garnet of industrial quality has been produced in the state.

Vermont

Vermont, like the other New England states, had an early iron industry based on small deposits of bog ore mostly confined to the southern and western parts of the state. The first operations were reported in the vicinity of Bennington in 1775. Ore was mined in Rutland County prior to 1785. In 1794 there were 14 forges, 3 blast furnaces, and a slitting mill in the Rutland district. At the same time Bennington County reported one forge in operation; Addison County, four; and Chittenden County, two. At one time in the early Nineteenth Century there were 14 bloomeries in the neighborhood of Vergennes – all of which were built by Boston capital.

A deposit of hematite exists in Franklin County. This ore was smelted in a Catalan forge in 1835 at Sheldon. Similar veins were found at Enosburg and St. Albans. A steel works, using a 10-ton open-hearth furnace, was built at St. Albans in 1872. The charge for the furnace was pig iron, scrap, and iron ore.

In the early 1900's there were many small blast furnaces in the state producing pig iron from magnetite, hematite, and bog ore. Some of the old furnaces were still in existence a few years ago at East Pittsford, Plymouth, Forest Dale, and East Bennington. Manganese minerals were often associated with the iron ore. The ore at Wallingford was particularly high in manganese.

There is little lead and zinc in Vermont. Mineralized veins containing sulfides of these metals with some copper were discovered at Bridgewater and caused a brief flurry, but assays showed that the quantities were small. Other unimportant veins have been found at several points. Some placer gold has been found at Plymouth and several other points. It is estimated that the total recovery approximates $10,000.

Copper has been mined at the Elizabeth Mine near South Strafford, the Ely Mine at South Ely, and the nearby Pike Hill mine. The first was discovered in 1793, the second in 1821, and the third in 1860. These mines have had a separate history, and before the discovery of the large Lake Superior deposits in Michigan, they gave Vermont top rating among the states as a copper producer. For several years the M.I.T. students in Mining Engineering were taken to these properties for a summer course which was given in mine surveying.

The Elizabeth Mine has proved to be the most important. For some years after its discovery it was operated to produce copperas (iron sulfate) used for making red paint. The property was operated successfully by the Vermont Copper Company beginning in 1870. At first the ore was shipped to Connecticut for treatment, but in 1885 there were 24 brick furnaces smelting the ore at the mine. The plant was remodeled in 1889–1890 and a concentrator constructed at an estimated cost of $700,000. George Westinghouse bought the property in 1897 and operated it until 1902. It is estimated that previous to the reopening of the property in World War II, the total production had been 400,000 tons of ore – averaging 3.3 per cent copper, and at one time it was the largest copper mine in the United States.

The Ely Mine declared $100,000 in dividends in 1865 but was bankrupt in 1883. The property was reactivated in 1888 and operated until 1892. It was sold to George Westinghouse in 1899 who conducted some experimental work for a few years and then sold it in 1917. The high price of copper during World War I stimulated some activity during that period. In the early operations, the sulfur was burnt off by heap roasting and the product smelted in water-jacketed blast furnaces.

The Pike Hill property was worked intermittently from 1860 to 1889, again from 1905 to 1907, and for a short time in World War I.

The present Vermont Copper Company which is operating the Elizabeth Mine has also acquired the Ely and Pike Hill properties.

Operations were commenced during World War II and are still proceeding satisfactorily. The development of differential flotation since the earlier operations has made possible the production of a concentrate with more than 30 per cent copper. Diamond drill exploration has developed a substantial ore body which has justified equipping the property with modern mining and concentrating machinery.

The sulfide tailings from the concentrating operations containing the high sulfur minerals, pyrite and pyrrhotite, are being sold to the Brown Company of Berlin, N. H., to provide sulfur dioxide for the treatment of wood pulp for paper manufacture.

This is the outstanding mining operation in New England today. The ore produced will yield 300 tons of copper per month containing traces of gold. There are 225 miners employed. The shaft is 975 feet deep and from it numerous drifts extend into the ore body. The present concentrating mill will handle 500 tons of ore per day.

Among nonmetallic minerals Vermont has been a producer of considerable quantities of asbestos and talc.

Massachusetts

Thomas Dexter discovered bog iron ore in Saugus in 1628 but it is not definitely known if other discoveries preceded this. As stated earlier in this discussion, John Winthrop, Jr., went to England to seek assistance in developing an iron industry in the colony. He returned with 1,000 pounds in capital and some operating personnel. His name is associated with three ventures in Massachusetts: one in the north precinct of Braintree, now Quincy; one in what is now Weymouth; and one in Saugus. The Weymouth site was granted to him but apparently never built upon except for a small forge.

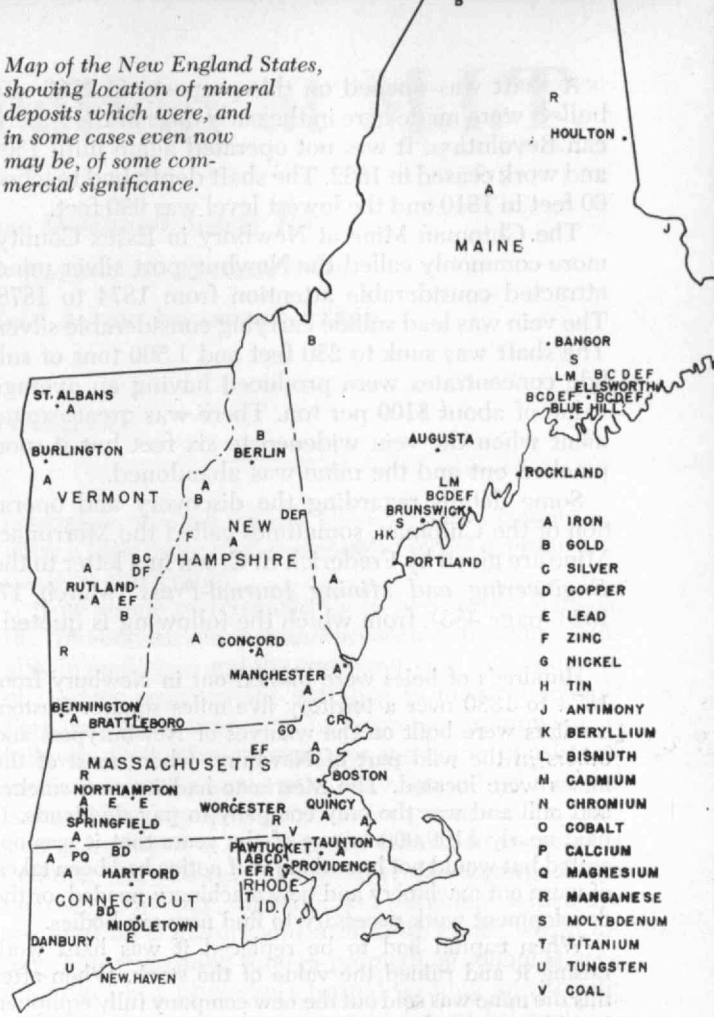
In November, 1643, nearly two years before the start of the Saugus furnace, a finery forge was begun in Braintree where a grant of 3,000 acres of land had been obtained but the work was not completed until 1645. A blast furnace was also constructed but it does not seem to have been entirely successful. Data are lacking regarding the details of this venture and the reasons for lack of complete success are not surely known. It is fair to assume that either insufficient ore or the poor quality of that available may have hampered the operations.

As this number of The Review is about to go to press, some excavations have begun on the site of the iron furnace in Quincy. The foundations have been uncovered and further discoveries are anticipated.

The furnace at Saugus has been officially designated as the first iron works in America. An earlier furnace is known to have been built in Virginia, but as smelting was about to begin, the operating crew was attacked by Indians; some were killed, others dispersed, and the equipment was destroyed. There is a difference of opinion as to whether iron was first produced at Saugus or at Braintree (Quincy) but the Saugus furnace was near a substantial deposit of good bog iron ore, and, from the start, continued for some years in successful operation.

Ore smelting was not profitably carried out in Quincy, although the plant continued to operate as a refining forge for treating some of the crude iron produced at Saugus. In 1648 Governor Winthrop wrote that the Saugus plant was producing seven tons per week. There is evidence that the Quincy plant operated until 1691, though the Saugus operations ceased in 1675.

Numerous deposits of good bog iron ore were found in Plymouth County and what is now Bristol County



Map of the New England States, showing location of mineral deposits which were, and in some cases even now may be, of some commercial significance.

Walter C. Eberhard

and these formed the basis of successful iron works. One of the first was established in the Raynham section of Taunton in 1652 by Henry and James Leonard, and Ralph Russell. This plant was operated by several generations of the Leonard family for over 200 years.

At least one furnace near Plymouth imported some ore from New Jersey. In 1804 there were 10 blast furnaces in Plymouth County producing iron castings. Other furnaces were established in Norton, Dartmouth, Cohasset, Topsfield, and Ipswich.

Deposits of iron carbonate exist in Stockbridge and some limonite and hematite (red iron oxide) extend from Connecticut through the Berkshire area to Bennington, Vt. In 1937 about 4,000 tons were mined in the Massachusetts section of this deposit.

Some chrome iron ore has been found in Chester and some manganese minerals at other Berkshire points.

Lead was discovered at Northampton in Hampshire County in 1679. B. K. Emerson in *U. S. Geological Survey*, Monograph No. 29, quotes the following from the old town records:

"At a legal meeting held October 16, 1679 . . . they then had further conference about the lead mine which Robert Lyman found out. They then voted that all such persons as would join in carrying out that design should meet on the 23rd of this instant at Sun one hour high at night and to have them or to those persons that shall appear the town do hereby give up all their right in that mine lying about six miles off at the west side of town."

A shaft was opened on this property in 1769 and bullets were made here in the early days of the American Revolution. It was not operated again until 1809 and work ceased in 1832. The shaft depth had reached 60 feet in 1810 and the lowest level was 990 feet.

The Chipman Mine at Newbury in Essex County, more commonly called the Newburyport silver mine, attracted considerable attention from 1874 to 1878. The vein was lead sulfide carrying considerable silver. The shaft was sunk to 230 feet and 1,500 tons of sulfide concentrates were produced having an average value of about $100 per ton. There was great excitement when the vein widened to six feet but it soon pinched out and the mine was abandoned.

Some details regarding the discovery and operation of the Chipman, sometimes called the Merrimac, Mine are given by Frederick E. Green in a letter to the *Engineering and Mining Journal-Press* (March 17, 1923, page 483), from which the following is quoted:

> Hundreds of holes were blasted out in Newbury from 1874 to 1880 over a territory five miles square. Custom smelters were built on the wharves of Newburyport and others in the wild part of Newbury, where most of the mines were located. The Merrimac had its own smelter and mill and was the only company to pay dividends. It paid nearly $100,000 in one of the years that it was operated but would not have done so if notice had been taken of worn out machinery and new machinery needed, or the development work necessary to find new ore bodies.
>
> When capital had to be replaced it was hard work raising it and ruined the value of the stock. When after this the mine was sold out the new company fully equipped it with new machinery but discovered too late that they had bought a salted mine and had no ore to treat. This company did not attempt to find more ore but closed down for good.

In 1919 the mine was reopened and $140,000 was spent during the next three years, but the work ended in failure and the property was sold in 1922 for $1,500.

One deposit of copper minerals has been recorded in Massachusetts. It was between Topsfield and Danvers but was apparently of little importance for no mining operations resulted from it.

Zinc sulfide, associated with lead and containing some gold and silver, has been mined at Sterling. The operations were of little importance.

Nickel with some cobalt and small amounts of copper, gold, and silver occurs in a deposit of sulfide minerals at Dracut, but although the mining of this ore has been attempted on several occasions, the operations have thus far proved to be unprofitable.

Manganese has been reported at Plainfield but the ore is low grade and no attempt has been made to exploit it.

A substantial deposit of iron pyrites occurs in the Davis Mine at Rowe, Franklin County. Although it contains some copper, its principal interest is as a source of sulfur. The mine was opened in 1882 and has been operated on several occasions. It is now attracting new attention because of the increasing interest in sources of sulfur.

A large deposit of coal exists in southeastern Massachusetts, beginning at about Mansfield, and extending southward into Rhode Island. This coal has attracted attention over many years and numerous attempts have been made to develop it into a useful fuel. The late Professors Robert H. Richards, '68, and Charles E Locke, '96, of the M.I.T. Mining Department, among others, gave the matter attention at several times, particularly during the New England coal shortage of World War I. The carbon content, however, although fairly high, closely resembles graphite and all attempts to make it a satisfactory fuel have resulted in failure.

Rhode Island

Joseph Jenks, Jr., son of Joseph Jenks, master mechanic at the Saugus, Mass., iron works, erected a forge at Pawtucket in 1675 and manufactured various articles including muskets. Jenks became an important figure in the colony and at one time served as governor (1727–1732).

The iron operations in Rhode Island were hindered by the fact that much of the bog ore existing there was unsuitable for producing metal of the quality required for nails, spikes, and tools.

A furnace known later as the Hope Furnace was built in 1835 by Samuel Waldo at Scituate, and several furnaces sprang up in Cumberland based on the magnetic oxide deposits there. The use of this ore gave difficulties because of the presence of titanium, but nevertheless a considerable production of munitions in the early days of the Nineteenth Century is recorded as well as bar iron, nails, farming implements, stoves, pots, and other household utensils. Iron for shipbuilding and other uses was also manufactured.

The ore from Iron Mine Hill in Cumberland contained 30 to 32 per cent iron and 10 per cent titanium oxide. It was usually mixed with hematite from Cranston before smelting. Cannons for the Louisburg expedition were cast here.

Minerals of copper, zinc, and manganese (some of the former carrying gold) have been found in Rhode Island but not profitably mined. These deposits are nearly all found at Copper Mine Hill in Cumberland. A small amount of molybdenite has also been reported. In 1840 an observer reported 50 prospect pits in this district.

Reference has already been made to the coal seam which underlies a section of southeastern Massachusetts. This seam extends southward, under the city of Providence, and a large contiguous area. The Rhode Island portion of this seam is apparently thicker and the coal of slightly better quality than that in Massachusetts for there are records that a copper smelter formerly operated in Taunton, Mass., used considerable coal from this district, and a mine operated in Cranston until very recently was able to sell its product. The present general opinion is that this coal is not competitive with that from other recognized coal districts.

Connecticut

From 1658 to 1762 all the iron produced in Connecticut was derived from bog ore. The earliest operations were by John Winthrop, Jr., and Captain Thomas

(Continued on page 268)

Premedical Education at M.I.T.

The Institute Has No Course Designed Solely for Premedical Students, Yet the Record of Alumni Who Have Entered the Medical Field Is an Impressive One

By MYLES MAXFIELD

As a rather unusual type of educational institution, M.I.T. assumes a peculiarly important position in the over-all picture of premedical education. Technology sends about 14 students to medical schools each year. These students graduate from the several courses, none of which has been designed primarily for future medical students. The Biology Department alone has formed its curriculum with a consideration of the needs of premedical students. In view of these things it is well to consider carefully this phase of education at M.I.T.

In particular, answers to the following questions should be sought: 1. What type of education, other than specific medical school education, is most needed and desired by physicians? 2. How can this best be furnished at M.I.T. within the existing organizational setup? 3. What recent innovations have been made directly to assist the student to become a better physician and a more valuable member of his community? 4. What is the record of M.I.T. Alumni in medical schools? Does this indicate that there is a satisfactory program of premedical education at M.I.T.?

With regard to the first question, medicine is an extremely broad and heterogeneous field. The patient must be studied from the point of view of his position in society or in his family, his mental or emotional problems, and his surgical, internal medical, physiological, biochemical, or biophysical problems. There are indeed medical specialists who study the patient from each of these points of view with special skills. But the point to be made very clear is that each patient is a single organism and must be studied with competence by any physician from all points of view. Medicine with all its specialties must nevertheless be regarded as an integrated whole. It is fully as bad for a physician to be ignorant of the biochemistry underlying a patient's discomfort as it is to be ignorant of his psychological pressures and motives. The point here is not to deplore specialization in medicine, which is certainly necessary but to deplore narrowness of thought.

The conclusion to be derived from this is that each student should obtain a solid grounding in both the natural sciences and in the humanities and social sciences, since what he will obtain of these in medical school will be almost incidental. Certain courses of study, such as biology, chemistry, physics, English, and foreign language are required for entrance to most medical schools, and a knowledge of the material in these courses is assumed in the teaching of technical courses in medical school. These required courses occupy a little more than one quarter of the average premedical curriculum.

How is one to reconcile these two facts – namely, the tremendous amount and breadth of training desirable in medicine, and the comparatively small number of courses required for entrance to medical school? Perhaps the answer may be expressed somewhat as follows: Definitive training for medicine consists of medical school courses plus the required premedical courses. The remaining time is for premedical education as opposed to training. By education is meant a definite, but difficult to describe, developing of the factual knowledge, attitude, and judgment which are required for a mature and useful life in our world today. This remaining time in premedical school is very important in a physician's formal training and should be given the most careful consideration by each individual student.

In general, the student should seek to become competent in some small area of learning of his own choosing, not necessarily related directly to medicine. Also he should increase the breadth of his background as much as possible with elementary courses in other areas, participating in discussion groups and extracurricular activities.

The course structure at M.I.T. is such that these principles may be especially well realized. Each student has a choice of some 20 courses in any of which he may major to become competent. There are in each course elective hours enough to satisfy entrance requirements for medical school and to broaden his educational background. There is no course at M.I.T. designed solely for premedical students, nor in our opinion should there be one, because this would tend to prevent the expression of individual interest in a special field of study. It would tend to create much too high a degree of uniformity among premedical students. Also, the tendency to offer, in such a special premedical curriculum, special dilute science courses for these students should not be overlooked. The Institute abounds with excellent courses in many fields taught by stimulating men of exceptional ability, and the opportunity must be preserved for premedical students to take advantage of these courses. It is exactly this that is responsible for the importance of M.I.T. in premedical education.

Course VII, Biology, most nearly occupies the position of a premedical course. Most Biology majors are

(Continued on page 262)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

In the Ballot Box

BALLOTS bearing the date of March 20 will be mailed to the M.I.T. alumni body of 44,000 to provide for nomination and subsequent election of: officers of the Alumni Association; alumni term members on the M.I.T. Corporation; members of the National Nominating Committee; and class representatives on the Alumni Council.

The Association's presidential nominee, for a term of one year, is Hugh S. Ferguson, '23, XV, President of Dewey and Almy Chemical Company of Cambridge, Mass.

To assist Mr. Ferguson in administering the affairs of the Alumni Association for the fiscal year beginning July 1, 1954, the slate of the National Nominating Committee lists Gilbert M. Roddy, '31, XV, as vice-president for a term of two years. Mr. Roddy is vice-president of the Boston Manufacturers Mutual Fire Insurance Company and Mutual Boiler and Machinery Insurance Company, Boston. He is president and director of the Emerson Hospital in Concord, and a trustee of the Boston Museum of Science, Wheaton College, and the Home Savings Bank of Boston. Active in alumni groups since 1936 when he was Class Representative on the Alumni Council, he has also acted as Class Agent. Among the committees in which he has held membership are: the Student Welfare Committee, Boston Luncheon Club Committee, Committee on Nominations for Departmental Visiting Committees, and the Advisory Council on Walker Memorial. Mr. Roddy is director of the Concord Community Chest.

The National Nominating Committee (which presents names of candidates for nomination and election) is composed of: Raymond H. Blanchard, '17, chairman, Laurence P. Geer, '15, Saxton W. Fletcher, '18, Harold E. Koch, '22, Whitworth Ferguson, '22, George P. Edmonds, '26, Richard L. Cheney, '27, Robert J. Joyce, '28, Albert R. Pierce, Jr., '31, and George E. Colby, '32. For the two new members to serve for two years on the Executive Committee of the Alumni Association, the above Committee has named: Donald W. Kitchin, '19, V, Research Laboratory of the Simplex Wire and Cable Company, Cambridge; A. Robert Tonon, '22, XV, President and Treasurer, Peter Gray Corporation, Cambridge.

Nominated to serve for five years on the Institute's Corporation, as alumni term members, are: Ray P. Dinsmore, '14, X, Vice-president, Goodyear Tire and Rubber Company, Akron, Ohio; William J. Sherry, '21, X, Oil Producer, Tulsa, Okla.; and this year's president of the Alumni Association, Horatio L. Bond, '23, XV, Chief Engineer, National Fire Protection Association, Boston.

Selected as representatives on the National Nominating Committee (one to be named from each district) are: *District 3* – New Haven – Harold G. Manning, '12, X; Hartford – Arthur F. Peaslee, '14, I; Bridgeport – David J. Sullivan, '24, X; *District 6* – Pittsburgh – Charles M. Boardman, '25, XV; Charleston – William S. Brackett, '23, X–A; Scranton – William L. Dennen, '17, XII; Bethlehem – Edmund J. Flynn, '19, X; Philadelphia – Samuel K. McCauley, '41, X and XV; Harrisburg – Harold R. Spaans, '30, XV; Washington, D.C. – George W. Stone, '89, IV; *District 7* – Louisville – Archie P. Cochran, '20, XV; Detroit – Morgan A. Collins, Jr., '27, I; Columbus – Garry C. Myers, Jr., 2–44, XVI; Dayton – William G. Payne, '27, XV; Chicago – Edgar F. Seifert, '19, V; Cleveland – G. Richard Young, '37, XV.

Classes whose numerals end in either five or a zero will vote for a Class Representative on the Alumni Council who will serve for a term of five years.

PRESIDENTIAL NOMINEE

Kampper, Belmont

Hugh S. Ferguson, '23, XV, President of the Dewey and Almy Chemical Company, Cambridge, has been nominated as president of the Alumni Association for the fiscal year beginning July 1, 1954. In 1951-1953, Mr. Ferguson was vice-president of the Alumni Association, and in 1948-1950 a member of its Executive Committee. He has served on the Alumni Council, and as a member and as chairman of several committees of the Alumni Association.

In addition to M.I.T. activities, Mr. Ferguson is treasurer of the Executive Committee of the Belmont Hill School, Inc., and a trustee of the Home Savings Bank and of the Mount Auburn Hospital in Cambridge. He is a member of the Chemists' Club (New York City), Union Club (Boston), and Newcomen Society of England (American Branch).

M.I.T. Photo

Horatio L. Bond, '23, XV

Ray P. Dinsmore, '14, X

D. LeRoy Randall, Tulsa World

William J. Sherry, '21, X

Nominated to serve as alumni term members on the M.I.T. Corporation for a period of five years, beginning July 1, 1954, are (from left to right): *Messrs. Bond, Dinsmore and Sherry. Mr. Bond, this year's president of the Alumni Association, is chief engineer of the National Fire Protection Association, Boston. From Akron, Ohio. Mr. Dinsmore serves as vice-president of the Goodyear Tire and Rubber Company. Long affiliated with petroleum engineering, Mr. Sherry is an oil producer in Tulsa, Okla.*

Boston Midwinter Meeting

WALKER Memorial was the scene of the 1954 Midwinter Meeting of Technology Alumni in Greater Boston, and more than 500 Alumni and friends attended the dinner and meeting on Thursday, February 4. As President of the Alumni Association, Horatio L. Bond, '23, opened the meeting, and introduced James R. Killian, Jr., '26, President of the Institute, and Horace S. Ford, Acting Director of the M.I.T. Division of Defense Laboratories, who was master of ceremonies, in a program describing some of the research activities of the National Research Corporation, Arthur D. Little, Inc., and Godfrey L. Cabot, Inc.

Reporting on the new developments at M.I.T., President Killian announced that the Institute has received $160,000 during the current academic year for undergraduate scholarship aid. "Yet in spite of this encouraging current level of giving," Dr. Killian said, "the Institute urgently needs to increase its capital funds for undergraduate scholarship endowment." He reported:

> In common with many colleges and universities, scholarship applications at the Institute continue to show a sharp upward trend. For the class which entered this fall, M.I.T. experienced a 50 per cent increase in scholarship applications, and all indications are that this year they will be nearly two and one-half times what they were four years ago.
>
> For this reason, it is clearly encumbent on us to find the means to extend our undergraduate scholarship aid. Our objective is to increase our present capital funds for undergraduate scholarships by more than three million dollars by 1957.

In speaking of the gifts received to date this year, Dr. Killian said that more than $100,000 is for current aid and that more than $50,000 is for undergraduate scholarship endowment.

Twelve foundations and 15 industrial concerns have made contributions for current aid. The largest new foundation gift is $16,650 from the Sloan Foundation. This contribution will be increased each year for the next three years to cover the terms of the new Alfred P. Sloan National Scholarships.

Largest industrial contributor to current funds is Holmes and Narver, Inc., Engineers and Constructors, of Los Angeles. James T. Holmes, President of the firm, was graduated from the Institute in the Class of 1914. This grant is in the amount of $10,000.

Among the grants given for endowment, Dr. Killian made special mention of those of Whitehead and Kales Company of Detroit; the Doelcam Company of Boston; and the Boston Stein Club.

The William R. Kales Scholarship Fund was named by Robert G. Kales, '28, in memory of his late father, an alumnus of the Institute in the Class of 1892 and a former member of the Institute's Corporation (*see* caption, page 256). This fund and that of the Doelcam Corporation, of which John J. Wilson, '29, is president, are for $10,000 each.

The Boston Stein Club gift for undergraduate scholarship-loan endowment is for $3,500. This is in addition to the Club's $40,000 Karl Taylor Compton Prize Fund award.

Other speakers on the program included: John H. Durant, Business Manager, Research Division, National Research Corporation, who demonstrated a method of depositing metallic films on nonmetallic materials; Warren A. Berg, Director of Public Relations, Arthur D. Little, Inc., who explained how electronic circuits were being used as an aid in studies of operational research; and Charles A. Stokes, '40, Director of Research and Development, Godfrey L. Cabot, Inc., who spoke on the role of carbon and silica products and their extensive use in rubber tires for the automotive industry.

Frederick H. Bailey: 1865-1954

With regret The Review records the death of Frederick H. Bailey, Professor of Mathematics, Emeritus, in Winter Park, Fla., on January 13. Professor Bailey retired from the faculty in 1935, after 44 years in the Department of Mathematics.

In collaboration with his colleague, the late Professor Frederick S. Woods, Professor Bailey wrote a number of textbooks which were widely used in the undergraduate teaching of mathematics.

He was born in Leominster, Mass., in 1865, and received the degrees of bachelor of arts in 1887 and master of arts in 1889 at Harvard University. For the following two years Professor Bailey served as assistant instructor in mathematics at Harvard, and in 1891 he was appointed instructor on the Institute staff. He was promoted to assistant professor of mathematics in 1893, associate professor in 1904, full professor in 1907, and professor emeritus in 1935.

In addition to his long career at M.I.T., Professor Bailey was instructor in mathematics at Radcliffe College in 1890 and 1891, and at Simmons College in 1902 and 1903. He was for many years a member of the American Mathematical Society.

Study for Executives

Dean E. P. Brooks, '17, of the M.I.T. School of Industrial Management, has announced receipt of a new grant of $170,000 by the Alfred P. Sloan Foundation, Inc., in support of the Executive Development Program for the coming year. This grant, he pointed out, is one of a series made in support of the Executive Development Program by the Sloan Foundation since 1938. During 1954–1955, it will be used to provide cash awards to winners of the fellowships, to cover costs of such special group activities as dinners and field trips, and to support and strengthen the educational resources which M.I.T. devotes to the program.

Fellowships for the 1954–1955 Program, Dean Brooks said, will be given to young executives who are nominated by their employers on the basis of "marked promise of growth into major executive responsibilities." The nationwide competition will close on March 5, 1954. Applications and further information are now available from Gerald B. Tallman, Associate Professor of Marketing, who is director of the Sloan Fellowship Program for Executive Development at M.I.T.

The year's study in the Executive Development Program is devoted to fundamental problems of business enterprise. "Despite their years of successful activity in special phases of industry, most young executives lack a familiarity with the wide range of essential business functions foreign to their own experience," Professor Tallman explained at the opening of the competition.

Participation in the Executive Development Program is limited to between 30 and 36 recipients of Sloan Fellowships. Nomination by an employer is a prerequisite, since employers co-operate in the program by sponsoring these men and by providing successful candidates with a year's leave of absence and financial aid. Fellows are drawn from both large and small companies in various types of industry.

No. 300

Four Technology Alumni who were present at the first meeting of the Alumni Council on May 12, 1909, and 13 past presidents of the Alumni Association were present at the 300th meeting of the Alumni Council on January 18. In attendance at this dinner meeting at the M.I.T. Faculty Club – over which Horatio L. Bond, '23, presided as president of the Association – were 146 members and guests. In ceremonies fitting for the occasion, the founding of the Association of Class Secretaries, the Alumni Association, the Technology Club, and The Technology Review was recalled during the social portion of the meeting, after regular items of business had been disposed of.

As Secretary of the Association, Donald P. Severance, '38, reported changes of class affiliation for five Alumni; that nine members of the M.I.T. staff had made visits to 16 local M.I.T. clubs – from Rochester to Mexico City, and from Providence to San Francisco. Also reported, as recorded on pages 252 and 253, were nominees for election to office in the Alumni Association. As of January 18, it was also reported that $156,117.68 had been contributed by 6,501 Alumni to the Alumni Fund for the current year.

President Bond, at the conclusion of the business portion of the meeting, turned the meeting over to Charles E. Smith, '00, President of the Alumni Association for the year 1934–1935, who acted as master of ceremonies for the rest of the meeting. Other past presidents of the Association who were present and introduced by Mr. Smith were:

Samuel C. Prescott, '94	President 1927–1928
Bradley Dewey, '09	President 1931–1932
Redfield Proctor, '02	President 1933–1934
Marshall B. Dalton, '15	President 1937–1938
Henry E. Worcester, '97	President 1940–1941
Francis A. Barrett, '24	President 1942–1943
Raymond Stevens, '17	President 1944–1945
A. Warren Norton, '21	President 1945–1946
Harold Bugbee, '20	President 1946–1947
Raymond H. Blanchard, '17	President 1947–1948
John A. Lunn, '17	President 1950–1951
Alfred T. Glassett, '20	President 1951–1952
Edwin D. Ryer, '20	President 1952–1953

First speaker of the evening was Walter Humphreys, '97, Secretary-Treasurer of the Association from 1907 to 1923, and Secretary on the occasion of the first meeting of the Alumni Council on May 12, 1909. In addition to Mr. Humphreys, others present at the January 18 meeting, who were also present at the first meeting of the Alumni Council, were, Samuel C. Prescott, '94, Andrew D. Fuller, '95, and Dr. John A. Rockwell, '96. A letter from the Institute's Acting President, Arthur A. Noyes, '86, and discussed at the first Alumni Council meeting in 1909, was read by Mr. Humphreys at the Council's 300th meeting. In this letter, Dr. Noyes recommended that alumni committees on the various departments be appointed to co-operate with the Visiting Committees of the Corporation, which at that time did not have alumni representation. He proposed that the Alumni Council make provisions for the development of local M.I.T. clubs throughout the country and proposed that Alumni promote the foundation of scholarships for sending boys to the Insti-

tute, and hoped that the Alumni Council would participate in providing satisfactory living places for the students as soon as the location of the Institute was definitely decided.

Dr. Prescott was next called upon to discuss some of the giants among our earlier graduates and Faculty, and some of the events of that era of 50 years ago which were important and critical not only for the Association but for the Institute itself. In particular, he mentioned the founding of the Technology Club, the Association of Class Secretaries, the founding of The Review, the bitter controversy over the proposed merger of the Institute and Harvard, and the consequent establishment of Alumni Term Memberships on the M.I.T. Corporation. Dr. Prescott closed his presentation by the following quotation from an article by Walter B. Snow, '82, written in 1909 for The Review:

"The Alumni Association is no longer young. It is now in a position to do man's work. Upon the composition of the Council, the central feature of the new form of organization, must depend largely the standing and influence of the Association as a whole. Election to this body should be comparable in honor to election as a candidate for the Corporation."

Mr. Smith next presented Marshall B. Dalton, '15, who, as 44th President of the Association, presided over the 200th meeting of the Alumni Council in May, 1938 – at the time of the campaign to raise $1,500,000 for a gymnasium and swimming pool – and later accepted the chairmanship of M.I.T.'s successful Development Fund campaign for $20,000,000. In speaking on the broad topic of corporate support for higher education, Mr. Dalton reminded his listeners that 1,500 colleges and universities, mostly private, receive the amount of $1,350,000,000 from student fees, endowment gifts and federal, state and local participations – which is $250,000,000 short of their needs.

As individuals of great wealth pass on and are unable to support education to the extent they did in the past, corporations increasingly recognize that partnership with education justifies broader corporate support. Congress recognizes this need as shown by the 5 per cent deduction allowed for contributions to education; 29 states recognize the problem by permissive legislation; the U. S. Chamber of Commerce and many professional organizations encourage corporate support; and the New Jersey Supreme Court settled the famous A. P. Smith Manufacturing Company *versus* Barlow case in favor of Princeton University. In particular, the Superior Court concluded:

"Such giving may be called an incidental power, but when it is considered in its essential character it may well be regarded as a major though unwritten corporate power. It is even more than that. In the court's view of the case it amounts to a solemn duty."

As final speaker of the evening, Karl T. Compton, chairman of the M.I.T. Corporation, spoke of the many ways in which Alumni have helped M.I.T. survive some of its crises and have assisted him and his associates in the discharge of their duties.

A nation's educational system appears to develop according to its current needs. So, too, changes at M.I.T. have conformed to the needs of the times as has been indicated by the increase in research and science in the period between the two world wars, and the marshaling of our resources for national defense and security since the beginning of World War II. Similarly, the Alumni Association has shown an ability to grow in spite of adverse environments. For example, in the early 1930's when enrollment had declined, the Institute turned to a group of Alumni to serve as local representatives of the Alumni Association and Honorary Secretaries to help maintain enrollment at reasonably constant figures.

Despite the limited number of students which M.I.T. can admit each year, the Institute's Administration recognizes its obligation to encourage the enrollment of those students who are best qualified and give greatest promise of using M.I.T. educational resources most advantageously. Again the Institute has turned to a selected group of its younger Alumni to serve as Educational Counselors in their respective communities. By keeping in touch with college preparatory schools in their communities, by interviewing prospective candidates and assisting them and their families to understand the Institute more fully, the Educational Counselors, as well as the Honorary Secretaries, greatly assist the Admissions Office in enrolling the best qualified candidates for admission. Dr. Compton concluded his remarks with a tribute to the service which Alumni have rendered in serving as members of the various Departmental Visiting Committees, or as members of the M.I.T. Corporation.

Joseph W. Powell: 1877-1954

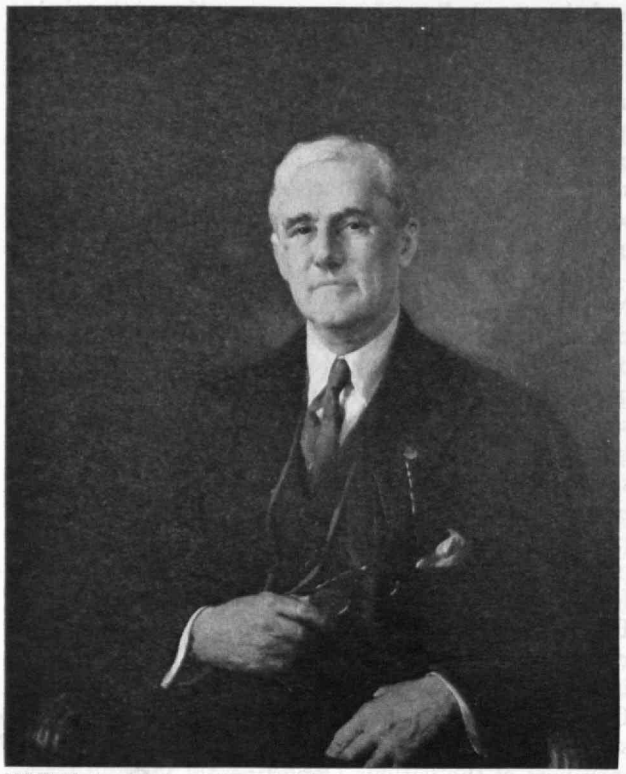
ANNOUNCEMENT of the death of Joseph W. Powell on January 25 was sadly received in The Review Office. Mr. Powell was a life member of the Institute's Corporation and a shipbuilder of international reputation. Born in Oswego, N.Y., in 1877, Mr. Powell was graduated from the U.S. Naval Academy in 1897. Following graduation, he took postgraduate work in naval architecture and marine engineering at the Academy, and subsequently studied for a year at the University of Glasgow.

Mr. Powell resigned from active duty in the Navy in 1906 to accept the position of assistant to the president of Cramp's Shipbuilding Corporation. In 1914 he became president of the Fore River Shipbuilding Corporation and in 1917 was appointed vice-president in charge of all yards controlled by the Bethlehem Shipbuilding Corporation, Ltd.

From 1921 to 1922, Mr. Powell served as president of the U.S. Shipping Board Emergency Fleet Corporation and from 1930 to 1939 he was president of United Shipyards. Since 1944 Mr. Powell had engaged in engineering projects relating to shipbuilding and shipping.

Mr. Powell served on the U.S.S. *New York* during the Spanish American War, and was a valued leader in the shipbuilding program of World War I. During World War II, Mr. Powell served as a special assistant to Secretaries of the Navy – Frank Knox and James V. Forrestal – and was also deputy chief of the Office of Procurement and Material of the Navy Department.

Mr. Powell was a trustee of Webb Institute and director of a number of corporations. He was also a past president of the Society of Naval Architects and Marine Engineers.



M.I.T. Photo

William R. Kales, '92

. . . from a portrait by Harold Brett . . . in whose honor the William R. Kales Scholarship Fund for undergraduates has been established at the Institute by Whitehead and Kales Company of Detroit, Mich. This scholarship fund for worthy and needy undergraduates was named by Robert G. Kales, '28, in memory of his late father, a former member of the Institute's Corporation. Income derived from investment of the gift will provide the scholarships, and winners will be selected by the Faculty Committee on Student Aid.

Builders of Towns

EXCEPTING the absence of Harry J. Carlson, '92, all members of the Visiting Committee on the School of Architecture and Planning* met with Pietro Belluschi, Dean of the School of Architecture and Planning, and other faculty members of the Department, on March 20, 1953. Dean Belluschi and the chairman of the Committee held an informal meeting on April 6 with James R. Killian, Jr., '26, President of M.I.T., Julius A. Stratton, '23, Vice-president of the Institute, and John E. Burchard, '23, Dean of the School of Humanities and Social Studies, since none of these administrative officers could be present at the March 20 meeting. The report of the Committee was made available for publication on July 29, and the following paragraphs summarize the major points in the report.

The demand for graduates trained in City Planning is well in excess of present supply, especially for positions in government. The needs of students in City Planning closely parallel those of students in Architecture, and the Committee agreed that a five-year Course in City Planning, combined with existing facilities in the Department of Architecture, was desirable.

* Members of this Committee for 1952-1953 were: William Emerson, chairman, Harry J. Carlson, '92, Carl L. Feiss, '38, Harry M. Weese, '38, Walter A. Gropius, Eero Saarinen, and Harlow Shapley.

Great interest was aroused and hearty approval expressed for the idea of a Center for Urban Studies at M.I.T. The problems besetting cities nowadays are multiplying at an alarming rate, while no organization, public or private, is set up to facilitate their proper research and study. This center would not only be an instrument for research, but would offer the City Planning students an opportunity to extend and give practical application to their professional education supplementing the theoretical problems at the School.

The Committee wishes to recommend to the favorable consideration of the Corporation such financial support as may be possible for the establishment of a Center of Urban Study at M.I.T.

The Committee deliberated the advisability of giving greater flexibility of choice to architectural students in such fields as structures, visual design, city planning, and related topics, particularly if the curriculum in the freshman year is liberalized. There was general and hearty approval of this idea in principle. At the present time such procedure is recognized in the work of graduate students who avail themselves of existing courses in construction, illumination, and acoustics, to their great advantage. The Committee feels that flexibility in the curriculum should not be carried so far as to lose sight of fundamental principles in basic design.

The proposal for a Materials and Techniques Laboratory suggested the value to the architectural student of acquaintance, during his undergraduate years, with the nature and behavior of materials that he will later have to employ. This knowledge he can secure only inadequately during the summer months. Certain facilities, such as those for testing materials, are already available. The realization of such a laboratory lies in a distant future, but the need is real.

The need of financial support for scholarships and other activities at the School was recognized and the organization of a Committee for that purpose approved, the machinery to be developed in co-operation with the Development Office and in close consultation with Dean Belluschi.

Appointments and Promotions

RECENT Faculty appointments and promotions at M.I.T. were announced on February 1 by James R. Killian, Jr., '26, President of the Institute. Promoted to the rank of assistant professor is Vincent J. Roggeveen, '53, a member of the Department of Civil and Sanitary Engineering. Thomas P. Rona, '53, has been appointed assistant professor in the Department of Mechanical Engineering.

Military personnel recently appointed to the M.I.T. Faculty include: Colonel Charles M. McAfee, Jr., Associate Professor in the Department of Military Science; and Captain Edward H. Littlejohn, Captain James P. Smith, and Captain Frederick L. Wilson, Assistant Professors in the Department of Air Science and Tactics.

John O. Outwater, '50, has been named an industrial liaison officer at the Institute.

(*Continued on page 258*)

BUSINESS IN MOTION

To our Colleagues in American Business . . .

Like other companies whose people do outstanding work, Revere receives many letters of appreciation. They are a source of great gratification, first because we want to render service, and second because good work shows that the way we select, train, and promote men to positions of responsibility is the right way. Let us quote from a recent letter.

"Thank you for bringing your welding engineer to assist us in solving our problems.

"On his visit to our plant last month, he helped us to establish sound procedures and in so doing, eliminated several expensive errors we were unknowingly making. We are especially grateful to him for the energetic way in which he went about his work, in spite of physical difficulties encountered due to our plant being in full operation. We appreciate his patience in answering all questions with which he was bombarded by operators, supervisors, and management alike.

"It was a real pleasure to have your welding specialist and a technical advisor with us, and we hope it will be possible for you to visit us again soon under less strenuous circumstances."

Our interest in welding stemmed originally from the fact that years ago it became evident that the market for Revere Metals would be expanded considerably if customers could be shown how to make perfect welds, quickly and at minimum expense. A Welding Section was set up within the Research and Development Department, where it was given full laboratory facilities. The activity was organized on both scientific and practical lines, with capable personnel who have solved many problems. In one case, two men were flown to a customer's plant, where they worked 20 hours a day over a weekend, and by Monday afternoon had the satisfaction of seeing the customer's operators turning out perfect welds, saving a substantial sum in penalties for delayed delivery.

The normal procedure whereby the Welding Section is called into action is simple. Usually a Revere Salesman uncovers a welding problem, and calls in the Technical Advisory Service. Often a Technical Advisor can provide the needed know-how. If additional help is needed, he can get it from the Welding Section people.

You may not be at all concerned about welding metals, and never expect to be. That does not matter. Whatever you make, or how you make it, you may have problems. Our suggestion is that you look around among your suppliers and see if one or more of them may not have just the special skills that you can use to good advantage.

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(Continued from page 256)

Midwest Regional Conference

FOURTH of its kind since the first M.I.T. Regional Conference was inaugurated in 1951 under the leadership of Robert E. Wilson, '16, the Midwest Regional Conference on Science, Engineering, and Industrial Management, held in Detroit on Saturday, January 30, drew an attendance of approximately 250 persons. This full-day conference was held in the Horace H. Rackham Educational Memorial Building, where the Engineering Society of Detroit has excellent facilities for such events. General chairman of the conference was Charles A. Chayne, '19, Vice-president in Charge of Engineering of General Motors Corporation. Other committee chairmen were: *Hospitality* – L. Willis Bugbee, Jr., '21; *Finance* – Morgan A. Collins, '27; *Arrangements* – Robert C. Doremus, '14; *Publicity* – David M. Sutter, '26.

Conference speakers included Robert E. Wilson, '16 – Chairman of the Board, Standard Oil Company (Indiana) – and the following personnel from the Institute: James R. Killian, Jr., '26, President; E. P. Brooks, '17, Dean of the School of Industrial Management; Francis O. Schmitt, Head of the Department of Biology; Antoine M. Gaudin, Richards Professor of Mineral Engineering; John G. Trump, '33, Professor of Electrical Engineering; and Elting E. Morison, Professor of Industrial History.

As President of the Detroit M.I.T. Association, Adam K. Stricker, Jr., '29, opened the conference and then turned the meeting over to Mr. Chayne.

First of the morning speakers from M.I.T. was Professor Schmitt whose address "Perspectives in the Life Sciences" included comments regarding the Institute's program in this field, along the general lines recorded by Dr. Schmitt in the December, 1953, issue of The Review ("Biological Science at M.I.T.," page 85). The Institute's program in biology is one which emphasizes biology at the molecular level, and places great stress on recently developed techniques of instrumentation. Professor Schmitt envisioned the time when the human life span might be appreciably prolonged through ability to control degenerative diseases and the aging process.

"Mineral Resources Policy for the United States" was the title of the second address by Professor Gaudin. Because mining is a wasted asset, it is imperative to provide mechanisms for replenishing minerals which are being used at a constantly increasing rate. Dr. Gaudin recommended appreciable expenditures for geophysical prospecting on a long range, national scale, and made a strong plea for a return to an era of mutual self-respect at the international level, and a return to those national policies which encourage incentive to make investments in minerals – domestic as well as foreign.

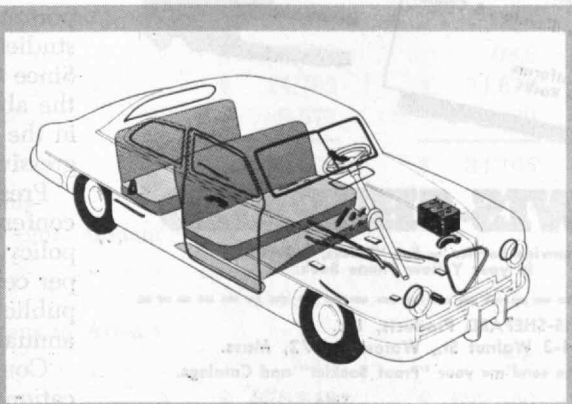
(Concluded on page 260)

You're riding on 238 pounds of Rubber ...and plenty of CARBON BLACK*

That new car you're driving is said to contain approximately 540 rubber parts*, and most of those rubber parts contain carbon black. Four pounds of carbon black in a tire adds 20,000 miles to its life, thus saving you the expense of several new tires each year . . . or saving you and all other motorists an estimated $1,000,000,000 annually. Your tires and tubes alone take 25 or 30 pounds of carbon black . . . at a cost of only 10¢ a pound.

Millions of pounds of Cabot blacks find their way into car and truck motors, bodies, tires and tubes each year. Rubber-carbon black compounds absorb shock and dampen vibration — do a hundred different things smoothly and efficiently. You'll find carbon black in the floor mats, rubber insulation, motor mountings, weather stripping, windshield wipers, heater hoses, vibration insulation — in fact, in most of the rubber at which you look. It's carbon black that adds the wear and tear resistance, much of the hidden comfort you've come to expect and don't realize is there. And carbon black isn't confined to the rubber parts alone, for it appears strikingly in the lustrous black finish and plastic trimmings as well.

*The Goodyear Tire & Rubber Company, Inc. Survey Report



Shaded and blackened areas denote some of the rubber parts used in today's average automobile.
Courtesy of The Goodyear Tire & Rubber Company, Inc.

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THE INSTITUTE GAZETTE

(*Concluded from page 258*)

Final speaker at the morning session was Dr. Trump who spoke on "New Applications of Science in Medicine." Theoretical physics in the mid-Twentieth Century is primarily concerned with a study of the forces binding atomic nuclei together; the results of such studies are as important in our industrial and economic life as in physics and international relations. Dr. Trump took an optimistic view of the future of atomic physics, pointing out that the beneficial uses which radium and radiography had already brought to mankind had already decreased the formidableness of cancer and other malignant diseases.

The afternoon session was opened with a talk by Professor Morison on "Problems of Industrial Leadership." It has been said that industry threatens the cultural life of society. If this be true, said Professor Morison, a good case can be made for giving future business executives ample opportunity in their college courses to become acquainted with the history and progress of the industrial revolution as a means of enabling them to see the social – as well as the economic – effects of important business decisions they will be called upon to make, usually without adequate data at hand.

"Synergism Between Engineering and Petroleum" was the title of Dr. Wilson's address. He cited many examples in which the engineering field had assisted the petroleum industry, and reminded his listeners that, by making the modern internal combustion engine available, the petroleum industry, in turn, had made a major contribution to engineering. Dr. Wilson recalled that anticipation of just and ample rewards for one's service is the best synergist, and expressed the hope that political, economic, legal, and technological conditions can be directed toward this end.

After dinner, Dean Brooks spoke on "Toward a Science of Industrial Management," outlining the aims of the Institute's School of Industrial Management in somewhat the manner reported on in the June, 1953, issue of The Review ("School of Industrial Management," page 419). The thought disciplines which characterize science and engineering provide an important base for the training of those who follow studies in economics and industrial management. Since management decisions must usually be made in the absence of adequate information, effort is made in the School to develop men who can operate progressively in areas where complete data are lacking.

President Killian made the closing remarks at the conference. Speaking on the Institute's educational policy, Dr. Killian recalled that M.I.T. does about 1 per cent of the nation's research, and estimated that public service activities of the M.I.T. staff represent an annual contribution of more than $1,000,000.

Considerable increases in the efficiency of the educational process could be achieved in making the transition from high school to college (as the freshman adviser plan at M.I.T. has demonstrated) and again from college to industry, Dr. Killian stated.

THE TECHNOLOGY LOAN FUND BOARD

Report for the Year 1953

For the fifth calendar year since the war, new loans made exceeded repayments on outstanding notes, these totals for 1953 being $276,085 and $98,469, respectively. By the end of December, 1953, 2,591 individuals – or 65% of the 3,976 receiving loans since the Fund was established in 1930 – had completely discharged their financial indebtedness to it. The data presented below summarize the Loan Board's transactions during 1953 together with cumulative figures for the past 21 years.

THE TECHNOLOGY LOAN FUND BOARD

J. A. Stratton
J. J. Snyder
T. P. Pitre
J. T. Rule
D. L. Rhind, *Secretary*
H. E. Lobdell, *Chairman*

Cambridge
March 1, 1954

CUMULATIVE RECORD OF THE TECHNOLOGY LOAN FUND TO DECEMBER 31, 1953

	At December 31, 1953	*At December 31, 1952*	*Net Changes during 1952–1953*
ITEMS OF OUTGO:			
Number of men Receiving Loans	3,976	3,644	up 332
Total Amount Loaned	$2,924,013	$2,647,928	up $276,085
Average per Capita Loan	736	727	up 9
ITEMS OF INCOME:			
Number of Men Whose Indebtedness has been Completely Discharged	2,591	2,467	up 124
Principal Repayments in Advance	$ 660,907	$ 639,927	up $ 20,980
Other Principal Repayments	1,376,712	1,299,223	up 77,489
TOTAL PRINCIPAL REPAYMENTS	$2,037,619	$1,939,150	up $ 98,469
Total Principal Matured, Considering "Advanced Repayments" as Matured When Paid	$2,071,978	$1,973,255	up $ 98,723
Collection Ratio, i.e. Percentage of Total Maturities Paid	98.3	98.2	up 0.1
Matured Principal in Arrears	$ 24,782	$ 24,676	up $ 106
Actual "Written Off" Accounts	9,577	9,429	up 148
TOTAL MATURITIES UNPAID	$ 34,359	$ 34,105	up $ 254
Percentage "Written Off" to Total Loans	0.33	0.35	down 0.02
Percentage Matured Loans in Arrears plus Amount "Written Off" to Total Loans	1.17	1.2	down 0.03
Interest Received	$ 250,379	$ 242,973	up $ 7,406
Times Interest Received to Matured Loans in Arrears plus Amount "Written Off"	7.48	7.5	down 0.02
NOTES OUTSTANDING	$ 876,816	$ 699,350	up $177,466

UNIVERSITY AND COMMUNITY

(Concluded from page 242)

One of my associates has recently observed that the layman sees little of science but its slums. He fails to see its great cathedrals – the intricately beautiful and always unfinished intellectual structures and concepts which are the real works of science. It is the mission of the university to work on these great cathedrals of the mind and spirit in all fields, and to possess the sense of striving which makes the cathedrals, and not the slums, the primary goal in all that we undertake.

If we can agree that one of the great ends of life is the indefatigable pursuit of the secrets of man and nature and virtue, then we can bend the material and the utilitarian to noble uses and we can find in the output of the creative mind the outlines of a better future. Instead of despair, we can hope for progress; instead of ugliness and evil, we can hope for more comeliness and virtue; instead of the darkness of ignorance, we can hope for new enlightenment. These hopes and possibilities can never fade when gifted minds and generous spirits come together to seek, to dream, and to understand.

These are some of the observations, the anticipations, and the feelings of optimism which are prompted by the inauguration of this graduate school. We salute it as a new resource for the community and the nation and we hope for it a great role in man's search for understanding.

PREMEDICAL EDUCATION AT M.I.T.

(Continued from page 251)

indeed premedical students, so the Biology Department has assumed the responsibility of making its curriculum especially suitable for these students. The Biology Course has been designed so that a premedical student enrolled here may easily satisfy all medical school course prerequisites. Indeed the specific requirements for graduation in biology include all the prerequisites in biology, physics, chemistry, and humanities for most medical schools. Also sufficient elective time is provided for foreign language courses and for additional work as desired. A course in comparative anatomy is offered by the Biology Department for those premedical students who find it required, or desirable, for the medical school of their choice, although this course is not ordinarily required for medical school or for graduation in biology. In addition, more advanced courses are offered in physiology, biochemistry, and biophysics to which a premedical student would not ordinarily be exposed. The student has the opportunity through his thesis to engage actively in research in some field of biology. This should be very valuable in his future medical career to a small extent because of the factual results of his research, and to a much larger extent because of a knowledge of research techniques and a knowledge of the limitations of the present concepts in biology.

(Continued on page 264)

Many Big Moments begin with a Familiar Ring

Often it's a call you've hoped for and waited for. From someone dear or about something especially important to you. Then suddenly there's a familiar ring. And everything's just wonderful!

Many's the time you would have paid the telephone bill for a whole month—and more—for that one call.

Whenever the telephone rings, it's a reminder of its double value. It keeps you in touch with other people. Helps other people keep in touch with you. Some days the calls you get are even more important than those you make.

Yet the cost of this two-way service is small. Less than a penny an hour for the average family.

BELL TELEPHONE SYSTEM

"Jack phoned to ask me to the dance"

"A prospect telephoned to give me a big order"

"Bob, Jr., called to tell me it's a boy"

"My Scoutmaster phoned about a camping trip"

PREMEDICAL EDUCATION AT M.I.T.

(Continued from page 262)

The Biology Department maintains a very close relationship to the medical profession. Two members of its faculty are physicians. Several members of the Department's staff are physicians who maintain research laboratories in nearby hospitals – the Massachusetts General Hospital, Peter Bent Brigham Hospital, and the Children's Medical Center. In addition, the Biology Department has undertaken and has continued for several years a program of postgraduate training in biochemistry, biophysics, and cellular physiology for physicians. There are, at the present time, about eight physicians actively engaged as students in this program. Thus, the Biology Department is constantly aware of the trends, opinions, and problems of the medical profession.

There have been several innovations at M.I.T. which should be of assistance to premedical students. An adviser to premedical students has been appointed who is on the faculty of the Biology Department. At the present time the writer serves as this adviser. The Biology Department is a natural choice for a guidance center for premedical students because approximately half of all such students are enrolled in this Department; the other half are divided among the 19 other departments. The duties of the adviser include: the guidance of premedical students; collecting and disseminating information on admission to medical and dental schools, and the current military status of premedical students; the interviewing of students; the writing of letters of recommendation for entrance to medical school when required.

Further recent innovations of interest to premedical students are as follows: The Biology Department has moved into a new building (*see* The Review, December, 1953) which affords more suitable teaching and research facilities. A Division of Biochemistry under the leadership of Professor John M. Buchanan has been established within the Department of Biology, to place greater emphasis on teaching and research in biochemistry.

Specifically for premedical students, a seminar on group psychodynamics has been established and is well into its second year of operation under the direction of Dr. Herbert I. Harris and Dr. Preston K. Munter of the Institute's Medical Department. This consists of the voluntary meeting of groups of six to 10 premedical students with a psychiatrist for an hour at weekly intervals for open discussion, under skilled guidance, of the problems of premedical students. The primary reason for these groups is the belief that a physician can better understand, and more ably treat, the problems of his patients if he first has some understanding of his own problems. This is in no way a course in medicine, but is simply an attempt to unearth some of the problems of prospective physicians, to discuss them, understand them and perhaps to learn to solve or to live with them. There are, of course, many secondary advantages to be derived from this type of program, such as a special study of the problems which later handicap physicians, discussion with students who are uncertain of their desire

(Concluded on page 266)

diversification:

another reason why

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California offers...

better careers for engineers

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The most diversified development program in Lockheed's history is under way—and it is still growing. The many types of aircraft now in development indicate Lockheed's production in the future will be as varied as it is today—and has been in the past.

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This capacity to develop and produce such a wide range of aircraft is important to career-conscious engineers. It means Lockheed offers you broader scope for your ability. It means there is more opportunity for promotion with so many development and production projects constantly in motion. It means your future is not chained to any particular type of aircraft—because Lockheed is known for leadership in virtually all types of aircraft. Lockheed's versatility in development and production is also one of the reasons it has an unequaled record of production stability year after year.

Lockheed AIRCRAFT CORPORATION

BURBANK, CALIFORNIA

PREMEDICAL EDUCATION AT M.I.T.

(Concluded from page 264)

to enter medicine, and discovery and correction of problems induced by life at M.I.T.

M.I.T. as a center of premedical education has, perhaps, most often been criticized because of the extreme emphasis on science. At the present time the humanities and social sciences are being strengthened by a very active faculty and a revised curriculum. Any further progress in this direction will be most welcome to future physicians. At present, eight semesters of class work in these fields are required of every undergraduate (and two more can now be elected by any student). This exceeds the requirements of most liberal arts colleges.

Now, how can one evaluate the premedical program at M.I.T.? The records of our students in the Medical College Admission Test are at the very top and so are most encouraging. This is an aptitude and achievement examination required for admission to almost all medical schools. The percentage of M.I.T. students accepted over the past few years for admission to medical school is essentially 100 per cent. The academic records of M.I.T. Alumni in medical school are definitely above average.

This represents all the available factual information to evaluate the premedical program and it should be realized that this is not sufficient to indicate how well M.I.T. Alumni succeed as physicians. Our records indicate that an unusually high percentage of our medical Alumni engage in medical research, and that M.I.T. Alumni are generally successful, either in medical research or practice. These records are not complete. Sorely needed is a detailed comparative study* of case histories of Alumni who have been engaging in the practice of medicine or medical research over a period of years. In addition, we have been guided in evaluating this program by opinions expressed by educators from medical schools throughout the country. These opinions are subjective, based on a wealth of experience, and are uniformly favorable toward our policy and educational philosophy.

There is, then, at M.I.T. an actively growing, constantly improving, program of premedical education, based on the soundest judgment and facts available, which measures up to the high standards of M.I.T.

* A study such as that of Anne Roe, "A Psychologist Examines 64 Eminent Scientists," *Scientific American*, 187:21, No. 5 (1952).

DOES A MAN WITH GOOD EYES ALWAYS SEE CLEARLY?

Not always . . . your eyesight may be good, but your foresight faulty.

Living costs have doubled in the last decade. Have you had the foresight to step up your life insurance accordingly? If you haven't, it is certain that you are underinsured and your family underprotected.

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The NEW ENGLAND MUTUAL *Life Insurance Company of Boston*

THE COMPANY THAT FOUNDED MUTUAL LIFE INSURANCE IN AMERICA—1835

MINING IN NEW ENGLAND

(Continued from page 250)

Clarke who started a furnace in New Haven in 1658. A fairly extensive body of iron ore, mostly limonite, existed in the northwestern part of Connecticut and extended into adjacent areas of New York and Massachusetts. From this ore, excellent iron was produced and at one time was used in the production of what were reported to be the best cast-iron car wheels in the country. In 1840 Connecticut ranked fourth among the states as a producer of iron products.

The property known as Ore Hill in the Salisbury district was one of the most active producers and supplied ore to a number of furnaces from before 1762 to about 1923. Ethan Allen and John Hazeltine established a furnace at Ore Hill in 1762 but sold it in 1765. It had a capacity of two and a half tons of pig iron in 24 hours.

At the outbreak of the American Revolution the owner of this property was a Tory who fled to England and the plant was seized by Governor Trumbull in the name of the state and operated throughout the war. Cannon, cannon balls, pots, kettles, and army equipment were produced in quantity. The furnace continued to operate after the Revolution and supplied guns for the *Constitution* and *Constellation*.

During the Civil War considerable iron was produced in this district for the naval "ironclads." It has been estimated that during its life the Connecticut section of the Salisbury deposit produced over 4,000,000 tons of ore and about the same amount was mined in the New York and Massachusetts sections combined. Eleven blast furnaces were in operation in 1837 in Connecticut, producing 6,000 tons of pig iron per year. Later there were 26 blast furnaces in operation – 22 of which were in the Salisbury district.

The only lead mine in Connecticut was located near Middletown in Middlesex County. The site was first granted to John Winthrop, Jr., in 1661. The smelting of sulfide lead ore required special skill and since many of the experienced men were pledged to the king not to operate in the colonies it was difficult to find trained personnel. Some men were found in New York and in New Jersey in 1775, but in 1778 they reported that the mine could not operate profitably.

A copper deposit was found in the northern part of Simsbury (now East Granby) and a company of local men was formed in 1707 to develop it. The town was

(Continued on page 270)

MINING IN NEW ENGLAND

(Continued from page 268)

to be paid 10 shillings for each ton of copper produced, the proceeds to be used for paying the school teacher. The early operations were unsuccessful but in 1714 it was reopened with the aid of capital furnished by Jonathan Belcher of Boston, William Partridge, and Timothy Woodbridge, and later joined by Andrew Freeman and Charles Cornelia of New York. In 1735 Governor Belcher reported that he had expended about $75,000 in the business and had erected a smelting plant in Boston.

This mine was operated with varying success until 1773. During this period several shafts were sunk — one to a depth of 80 feet — and the ore was found to average 3 to 5 per cent copper. The shape of the ore body was such that several large chambers were excavated during the mining operations, and when the mine was closed, the suggestion that it be used as a prison was adopted. It continued to be used as such for 37 years, among the prisoners being Tories confined during the early days of the American Revolution. In 1830 and again in 1855 attempts were made to mine ore profitably but they failed. The mine is now maintained as a museum.

A copper deposit was discovered at Bristol in the early 1790's but at first only a small amount of ore was mined. The mine was reopened in 1836 but the company went bankrupt in 1846. New owners took over in 1847 but they, too, were unsuccessful. Thirty years later another futile attempt was made to operate the mine profitably. Eight shafts, the deepest 400 feet, and several thousand feet of drifts had been excavated in the various operations. The property is famous for the excellent chalcocite crystals, which are highly prized in mineralogical collections.

A tungsten deposit occurs at Trumbull. It was discovered in 1887 and has attracted some interest because the United States is deficient in this metal, but thus far attempts to operate it profitably have failed.

During World War II the New England Lime Company operated a government-owned plant at Canaan for the production of magnesium from dolomite rock. Some calcium was also made in this plant by a similar process. The method used at this plant for magnesium cannot compete, without the government subsidy then in force, with the process used for producing magnesium from sea water which supplies most of the mag-

(Continued on page 272)

What General Electric people are saying . . .

T. M. LINVILLE

Mr. Linville is Manager, Research Operation Services Department, General Electric Research Laboratory

". . . It may well be that the supply of professional managers may determine the fate of our civilization. Adequate supply coupled with further development of the science of managing is needed, because the fulfillment of human wants demands organized human effort on an ever-increasing scale.

People today, as always, are seeking more comforts and less drudgery as well as protection from the hazards of life. Today the outstanding hazards are war, unemployment, illness, old age, and dependency of loved ones. The comforts being sought are the age old ones of food, shelter, and clothing, and the newer ones of education, recreation, and personal freedom and development.

If professional managers fail to meet these objectives, some short-sighted politicians are likely to lead the people to give up their economic and political freedoms, thereby freezing the economy into low-level production.

Professional managing is a calling in which one puts special knowledge to use with broad human understanding in the services of not only himself and his employers, but also in the service of his employees, his customers, and the community and nation.

This is a very different way of managing from the pre-Civil War slavery in the South and autocratic empire building in the industrial North. It has come about in this twentieth century. It is a professional kind of job.

The feudal concept that first dominated the industrial world has been replaced by business organizations which operate in the interest of, and by the consent of, owners, employees, customers, and the public. The managers are professional employees. The ownership is diffused. Such organizations put to work the people's savings. They provide the best means to gain the benefits sought by the people at large.

at The University of Illinois

E. S. LEE

Mr. Lee is Editor of the General Electric Review

". . . The prophecy made years ago by Dr. Steinmetz that the electrical age—and the electrical industry—was in its infancy, can still be made today. In 1935 the electrical manufacturing industry supplied only 1.7 percent of the gross national product. Today it supplies 4 percent. There are those who forecast that as early as 1961 the products of electrical manufacturing will represent an estimated 5½ to 6 percent of the gross national product.

The forecasters have been busy, too, drawing dotted lines to show the probable kilowatt-hour output of electric power in the years ahead. A once daring prediction of one-trillion kilowatt-hours for the year 1970 is now moved ahead to 1965, and the really long-range prophets are talking among themselves about an annual output of five-trillion kilowatt-hours by the year 2000.

By virtue of its position, the electrical industry must be prepared to grow more than twice as fast as the remainder of the economy. Based on the best estimates of the growth of the economy as a whole, it is probable that in the next 10 years as much electrical generating equipment will be built, sold, and installed as has been built and installed in the industry's past 75-year history.

What a prospect for the engineer! Such growth means the solution of new and more complex technical problems, together with the advancement of managing ability to solve the many human problems that come with the expanded units of production. In both of these realms the call for solutions is intense. In ever-expanding avenues the opportunity for the new is more extensive than ever.

G.E. Review

J. K. WOLFE

Dr. Wolfe is a Research Associate at the General Electric Research Laboratory

". . . Recently, a new class of fluorine compounds, namely 'fluorocarbons' have appeared which show promise of considerable commercial as well as scientific interest.

These fluorocarbons whether gas, liquid or solid, show extraordinary stability toward heat and oxidation from air of chemicals. The solids and liquids are not swelled or attacked by gasoline, solvents, acids, or other chemical materials. High thermal stability is a well-known characteristic of the inert fluorocarbons. On heating they decompose only at high temperatures in the range of 1000 degrees F. to mixtures of saturated and unsaturated compounds. They are not attacked by the usual chemicals, acids, bases, or oxidizing agents, even at high temperatures. In the electrical field, fluorocarbon liquids have many properties which can afford a basis for new equipment design. A combination of properties which these materials possess is certainly not found in any other class of fluids. Besides being nonflammable and usually stable, they possess exceptional electrical properties being particularly resistant to the flow of electrica current over a wide range of frequencies.

Some of the more recent developments of fluorocarbon derivatives are just beginning to open more fields. The initial high prices of these materials will undoubtedly be decreased as the volume and use becomes more extensive. The price will undoubtedly follow the established pattern as production increases and there are many other places where you will see fluorocarbons occupying a very important spot in the future.

G.E. Science Forum
WGY, Schenectady, N. Y.

MINING IN NEW ENGLAND

(*Continued from page 270*)

nesium now used. New England has plenty of sea water but with the climate handicap it is doubtful if it can compete with the plant on the Gulf Coast.

Quarrying in New England

It would be inappropriate to close this discussion without a few words about quarrying which has many things in common with mining. Excellent granite is found in several places in each of the New England states. It was not extensively used in colonial times, but as quarry tools and techniques developed in the Nineteenth Century, its use increased for building stone monuments.

The construction of Bunker Hill Monument in Charlestown, and of such buildings as King's Chapel and the old Custom House in Boston, gave impetus to the quarrying of building stone; and the development of cutting and polishing devices made granite a competitor of marble for monuments and finely finished ornamental building stone.

Such centers as Barre, Vt., Westerly, R. I., Quincy, Mass., and a few other places still maintain a high reputation for polished stone used for gravestones, other monuments, and building trimmings.

Marble was easily worked and was widely used in early times for various purposes. Maine has limestone

(*Continued on page 274*)

New! Low Cost! RENTAL PLAN for Electronic INDUCTION HEATING and DIELECTRIC HEATING GENERATORS!

AMERICA'S FINEST HIGH PRODUCTION EQUIPMENT for BRAZING

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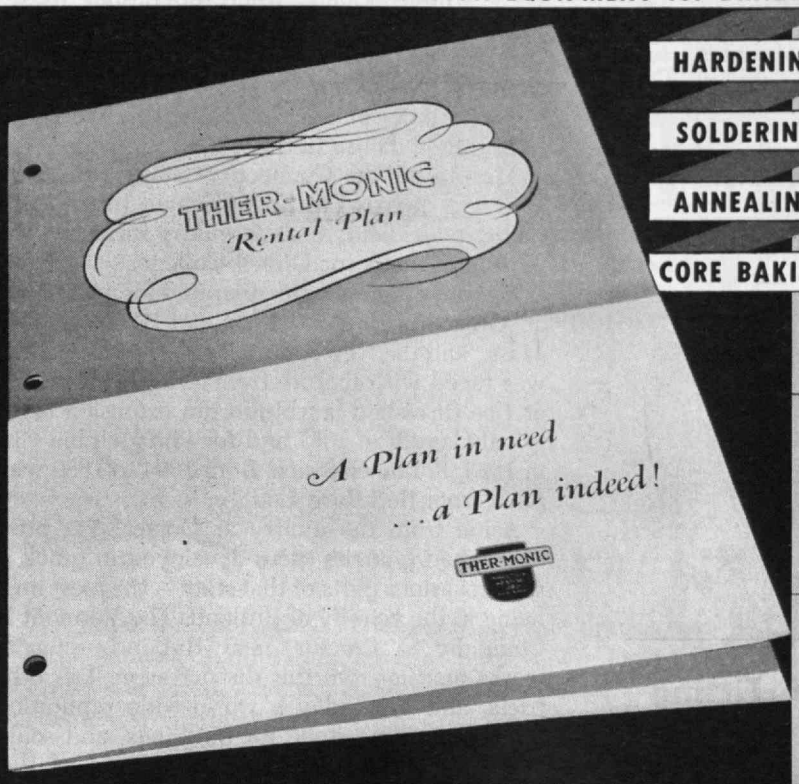

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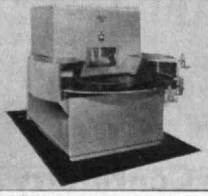

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As approved by the Internal Revenue Bureau, this plan permits acquired new equipment to be regarded as an expense—payable out of earnings before taxes!

And . . . in that Induction Heating Equipment pays for itself out of created profits, it lightens the fixed assets' load—frees capital—and enables industry to satisfy its dire need for modern, more efficient, competitively effective modernization.

The Ther-monic Rental Plan incorporates a nominal ($200.) installation charge—and schedules low monthly rates that further reduce themselves annually.

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Edward S. Goodridge, President—'33

MINING IN NEW ENGLAND

(Continued from page 272)

in quantity suitable for burning to make lime but the true marble belt extends from Connecticut through the Berkshires of Massachusetts into Vermont.

One of the first marble quarries was opened in 1785. The earliest important contribution to marble quarrying was made by Philo Tomlinson at Marble Dale in New Milford, Conn., where operations were begun just before 1800. Although Tomlinson did not invent the method for cutting marble with a smooth wire and sand, he greatly improved the procedures and made an important contribution to marble working which encouraged its use in thin slabs.

Marble for the Connecticut state capitol at Hartford was quarried at East Canaan. Just north of this point, in Sheffield, Mass., a quarry furnished the large marble columns for Girard College.

Various other quarries operated for a time profitably at Great Barrington, Lee, and West Stockbridge, Mass., and the New York City Hall built in 1803–1811 was faced with marble from Alford, Mass. A quarry at Lee furnished marble for an extension of the National Capitol in 1867 and for Philadelphia City Hall in 1885. Public contracts from 1804 to 1880 were supplied from Berkshire County.

Aside from the quarry at Dorset, Vt., previously mentioned quarries were developed in quick succession in various parts of that state — the most important being in the vicinity of Rutland. The Vermont Marble Company at Proctor, near Rutland, quarries and works marble from this district as well as other districts, and has today a world-wide reputation as a producer of fine stone for buildings and sculptures.

Slate has been produced in several of the New England States but the industry has never been of great importance in this region.

And so ends a rambling discussion of mining and quarrying activities in New England. Some have become wealthy in these pursuits, some have made a living, and others have lost money, but the age-old wrestle with Mother Earth to get accessories for what we call civilization never loses its interest. It would take a wiser man than the present writer to predict what the future holds in store in this section of our country for those who have the wisdom and courage to extend the successes and build on the failures of those who have gone before.

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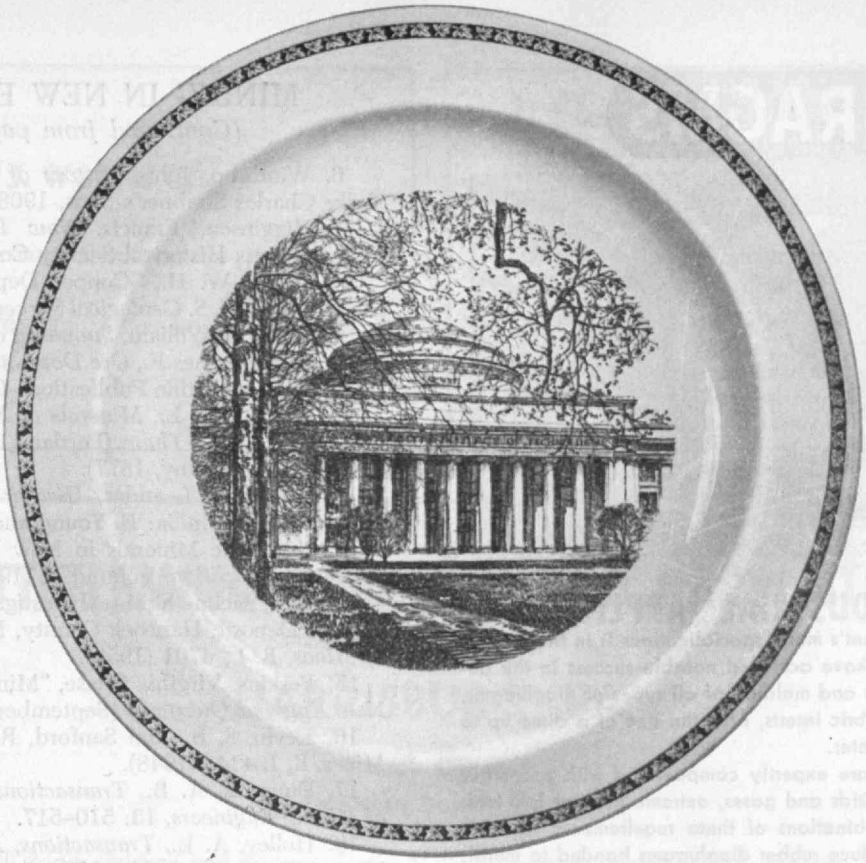

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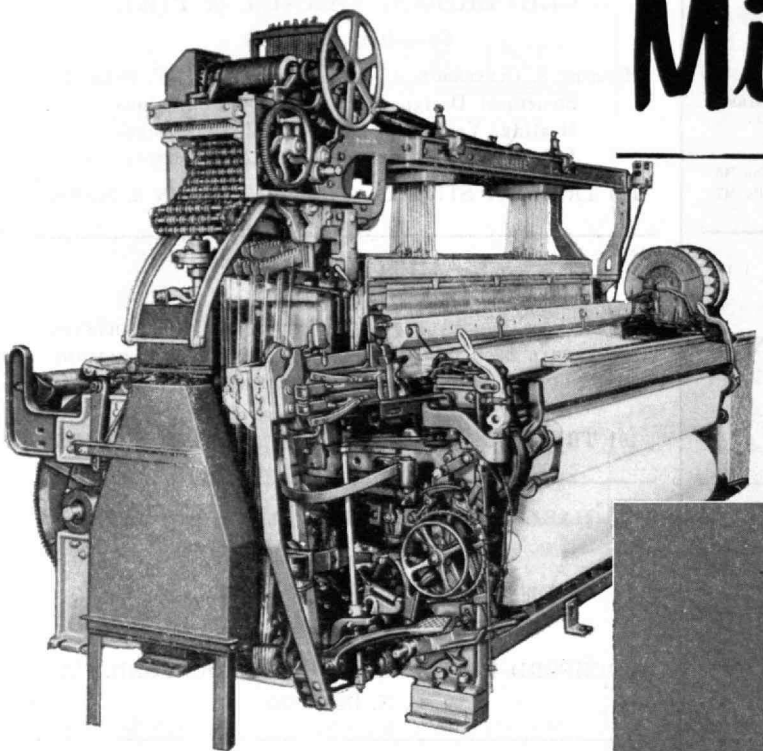

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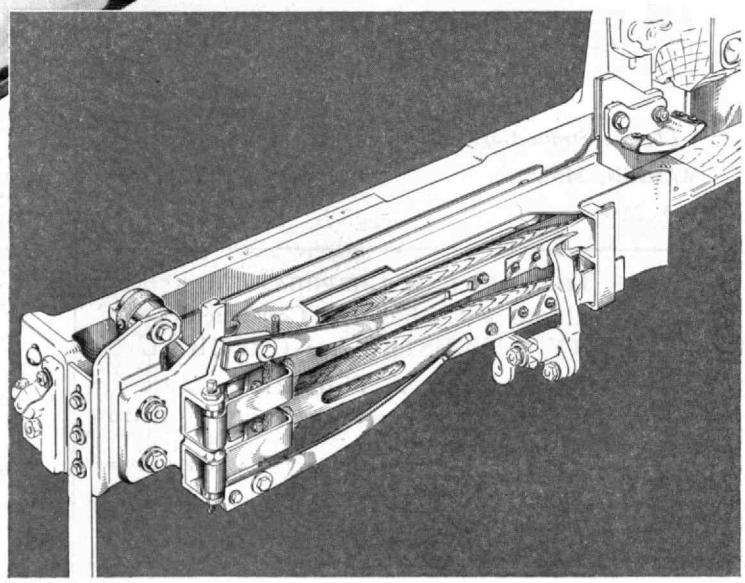

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News from the Clubs and Classes

CLUB NOTES

Boston Luncheon Club

The second meeting of the 1953-1954 season was held at the Union Oyster House on Thursday, November 19, with a record attendance, to date, of 78. Walter G. Whitman'17, Head of the Department of Chemical Engineering, spoke on "Defense Research and Development."

Professor Whitman focused his talk on the problems of management in a research undertaking of such magnitude as the Research and Development Board, Department of Defense, for which he served as chairman until a few months ago. The Board's budget ran about one and one-third billion dollars a year, with some 60 per cent expended in industry; 25 per cent in governmental installations such as Edgewood, Aberdeen, and the Guided Missile Center, N. M.; and 10 per cent in universities. If this budget is combined with that of the Atomic Energy Commission, more than half of the total research expenditures of the country are accounted for. In general, Congress has seemed more willing to appropriate money for research and development than for other parts of the defense program.

The Board consisted of two representatives from each of the Services – Army, Navy, and Air Force – and a civilian chairman appointed by the President. Each of the Service representatives had one vote, and the chairman had six votes. The chairman also was advisor to the Secretary of Defense on research and development matters, and was charged with the responsibility of initiating and terminating programs in the Board's field of competence. There was some feeling in the Department of Defense that, in some of its functions, the Board overlapped an older body, the Munitions Board; and the Rockefeller Committee, which made a study of organization in the Department, recommended that both boards be abolished and be replaced by assistant secretaries of defense. This recommendation has been carried out. The new assistant secretary for Research and Development will have an advisory board, however.

The Truman budget for fiscal 1954 provided one and one-half billion dollars for research and development, which the Eisenhower revision cut to one and one-third billion. Secretary Wilson subsequently set one billion dollars as a goal, but allowed latitude for additional sums if they could be well justified. Professor Whitman expressed doubt that the country has enough talent to undertake more research and development than it is doing at present, quite apart from the monetary aspects of the problem. Now that Russia is equipped with atomic bombs, a gun is pointed at our heart, and each country may be able to hit the other a knockout blow. In Professor Whitman's opinion, atomic warfare is the overwhelmingly dominant field in need of research, and the primary efforts of the Board were directed into those areas – electronics, radar, aircraft, and guided missiles – which tie in with atomic warfare.

Our most urgent need is to get ourselves into a defensive posture. This approach has met some resistance from the Services because a possible attack on the continental United States has not been a factor in their thinking since the War of 1812. Professor Whitman said that it became evident in the last few months of his tenure with the Board, though, that the views of the Services were swinging around to recognize this need. He believes that the Services require guidance on policy, but must be allowed to run their work themselves. So far as unification is concerned, we should remember that this concept is only seven years old, and within that time, Wilson is the fifth secretary of defense. Progress is being made, but the key is strength and competence in the Secretary's office. The services are working better together and are willing to accept leadership from above, provided that they have confidence in that leadership. – Vincent T. Estabrook'36, *Secretary*, Standish Ayer and McKay, Inc., 50 Congress Street, Boston 9, Mass.

M.I.T. Association of Cleveland

The Association's annual student luncheon was a rousing success. On December 29, 1953, at the Hotel Hollenden, 31 members turned out to welcome 11 present M. I. T. students from the Cleveland area, who favored us with their presence. Following a social period and an excellent luncheon, President Howard P. Ferguson '27 called for the usual introduction of all persons present. We were then treated to a series of brief reports on current developments at M. I. T. from our student guests, as arranged by Lawrence C. Turnock, Jr., '41. The student reports and their subjects were: W. T. Deibel'55 – Activities; William M. Fitz-Gibbon'56 – Athletics; Royal Riedinger'54–Student Government; David Bloomfield'57 – Field Day; Alan Glueck'55 – M. I. T. Building Program; Lee Zuker'55 – R.O.T.C. Other student guests were: Donald B. Evans'55; George Inada'54; Stanley L. Kroder'57; Edward F. Schuman, Jr.,'57; Thomas Walklet'57.

Members who were present were: Ernest L. Akerley'23; Ralph W. Bell, Jr., '52; J. Raymond Bird'31; Theodore S. Bogardus'27; Willard Brown'16; King Cayce, 10-44; Duryea E. Elmendorf'26; Robert J. Fay'42; Howard P. Ferguson'27; William K. Geist'50; Herbert J. Hansell, 2-46; Gerald L. Hartstein'51; Paul Heilman, 2-44; George Howard'52; Norman R. Klivans'40; Robert D. Knight '31; David Kobick'47; Charles Lenhard, 10-44; Don Moore'24; Walter F. Munford'23; Frederic W. Reuter, Jr.,'38; William H. Robinson, Jr.,'24; Thomas A. Romanowski'52; John B. Scalzi'40; Frank Schreiner'26 (and son); William C. Sessions'26; Charles H. Smith, Jr.,'42; R. H. Smith,'23; Lawrence C. Turnock, Jr.,'41; G. Richard Young'37; Art Zimmerman'37. – William M. Folberth, Jr.,'41, *Secretary*, 1107 Forest Drive, Lakewood 7, Ohio. Herbert J. Hansell, 2-46, *Acting Secretary*, 1759 Union Commerce Building, Cleveland 14, Ohio.

M.I.T. Club of Fairfield County

The Club held its fall dinner meeting on December 2 at the Clam Box in Westport, Conn. The speaker of the evening was F. Leroy Foster'25, Associate Director of the Division of Industrial Cooperation. Dr. Foster discussed the various sponsored research projects which are under way at the Institute. The group found this an intensely interesting subject, and were astonished at the magnitude of the research program. All sponsored research should contribute to the educational objectives of the institution, should be something that the participating staff members wish to do, and should be open to graduate students.

Forty-seven Alumni attended the meeting. They were as follows: Richard Berger'16, James Braxton, 2-46, Morton Baker'29, Richard Benson, Jr.,'30, J. Barton Chapman'35 Curtis Cummings'32, Albert F. Clear, Jr.,'42, Maurice Davenport'00, William C. Gilman'22, Clinton R. Hilliker'39, Robert W. Harley'51, Lawrence E. Hough'37, John A. Hurd'33, Michael Kundrath'31, Vello Kampman'51, Charles H. Lucke, Jr.,'34, Herbert Levick '50, Jay Mullen, 10-44, Charles W. Maschal'22, Leonard Meyer'49 Albert Madwed, 2-44, Jack Madwed'42, Lewis W. McKee, 10-44, Gilbert C. Mott'37, John Nevins, Jr.,'51, James F. Notman'35, Horst Orbanowski'31, R. Byram Porter, Jr.,'31, William W. Quarles'24, William F. Rooney'26, Philo S. Shelton'18, Joseph A. Sabo'52, Robert H. Smyth'28, Charles E. Smith, Jr.,'49, Robert W. Stewart'24, David J. Sullivan'24, William J. Schaefer '22, Anthony R. Savina'30, George H. Sistare, Jr.,'32, Samuel R. Spiker'25, Edward L. Wemple'34, Walter L. Wise, Jr., '34, Max L. Waterman'13, Donald W. Waterman'39, Aaron M. White'39, Karl E. Wenk, Jr.,'42, and Abraham I. Zimmer'39.

It was announced that another meeting will take place in the spring. – Gilbert C. Mott'37, *Secretary*, 92 Beers Place, Stratford, Conn.

M.I.T. Club of Fort Worth

The Christmas meeting of the Fort Worth Club was a most unusual one this year for a number of reasons. Actually the meeting date was December 17. Nor-

mally meetings are held in town, but for this meeting the spot chosen was the new International Airport just midway between Fort Worth and Dallas; and the meeting was a joint one with the Dallas Alumni group. The membership of the two groups amounts to about 300 which is not bad for a couple of towns so far from Cambridge. The population of the combined cities is about a million. The meeting was conducted by the combined officer group of the two cities and a most enjoyable time resulted – with an attendance of over 120. Tours of the airport, which is probably the most modern and complete one in the United States, were arranged for all who were interested. A pre-meeting social hour, Texas style, had been arranged so that all attending were enthusiastic for the meeting when it began. Right on the minute, too, M.I.T. style.

The officers of both Clubs were introduced as well as a number of V.I.P. guests. Among these was Alexander Macomber'07, a past president of the Alumni Association and a most entertaining speaker. We need more speakers of Mac's calibre. He told many stories – about his life after leaving the Institute; early days in California; trips and talks as a representative of the Alumni Association; and his design and construction of canned speeches for the Hinterland Alumni. These, he said, he turned over to Lobby Lobdell when he gave up traveling. Lobby, who was next up after appropriate introductions, took exception to the charge. He admitted having received the canned talks, as charged, but declared he lost them under very mysterious circumstances. Lobby was at his charming best. He told stories about his travels to visit M.I.T. Clubs in many lands, of the new doings at the Institute, of the unusual circumstance where the number of people on the Institute's payroll exceeded the number of students – and how very unusual his reception had been at Fort Worth and Dallas. He told of his meeting with E. G. Senter, Jr.,'17, upon his arrival in Dallas and of his pleasure at seeing old friends, such as General Frank Bell'10, Cecil Green'23 and D. H. Clewell'33 again. Then, after a short stay in Dallas he had been whisked by helicopter, supplied through the courtesy of Bell Aircraft Corporation, to the number one Heliport of the country – that of the Western Hills Hotel in Fort Worth (W. T. Green '40, co-owner), where he was put up in the Walter Hagen suite. (Bill Green is in quite a number of enterprises about Fort Worth so the fact that he owns [to a certain extent] a hotel need be no shock to anyone.) Speaking of helicopters leads us to remark that a number of our members are asociated with Bell including Charles Ajemian, 2–46, and Edwin J. Ducayet'31; also, the 50th anniversary of powered flight was being celebrated at the time of our meeting. So everybody had a really enjoyable time. It was agreed that the joint meeting was a success, and we ought to have them frequently.

Others at the head table included Thomas S. Byrne'13 whose firm contracted the building of the International Airport, Joseph Pelich, architect of the project, Mr. T. H. Jenkins'32 of the Houston M.I.T. group and H. H. Imray'32, Vice-president of the Texas Eastman Company at Longview. Practically all of the Alumni and guests attending were accompanied by their wives. The story of the meeting would be incomplete without mentioning the tremendous amount of work done by Presidents S. E. Travis, Jr., '21, of the Fort Worth Club, and Cecil Green'23 of the Dallas Club. Dr. D. H. Clewell'33 of the Dallas Club deserves especial mention since he not only had to get in touch with the whole Dallas membership and arrange for reservations but, due to Mr. Green's absence from Dallas during the period just prior to the meeting, he had to take over much of Mr. Green's work. That boy Clewell can sure put out the work. Now that the meeting is over the new officers of both Clubs will have a fine mark to shoot at. Incidentally, the Fort Worth Club meets quarterly on the third Thursday of the month – next meeting March 18. Any Alumni in town on that night are welcome. Just call any of us, and we'll tell you where the meeting will be held. Probably at Western Hills – Bill is a really swell host. – RALPH R. UHRMACHER'31, *Secretary*, 3531 Westcliff Road, South, Fort Worth, Texas.

M.I.T. Club of the Miami Valley

The Club met on January 4 at the VanCleve Hotel for dinner and a talk by Ivan J. Geiger, Assistant Professor of Physical Education, and Director of Athletics at M.I.T. Seven high school seniors also joined us, and we all enjoyed Ike's presentation.

Subjects of interest in the talk included the P.T. test program and point system for athletic participation at Tech; the decision on the bathing suit problem; the ice skating area plans; and the equipment now available for sailing and crew. Professor Geiger also commented on N.C.A.A. athletic activities including TV football.

Bill Anderson'52, of Frigidaire, our Industrial Management School representative, has been appointed West Coast Appliance Sales Manager for Frigidaire – EDWARD E. BARNEY'42, *Secretary*, 1720 Academy Place, Dayton 6, Ohio.

M.I.T. Club of Milwaukee

At noon Tuesday, December 29, 11 M.I.T. students were guests of the Club at a luncheon held at the Wisconsin Club. Students journeyed from all parts of the States to attend the luncheon, as there were guests from Wausau, Kaukauna, Madison, and Burlington as well as many from Milwaukee. Peter Starck'53 gave an interesting talk to the group about the new Executive Development Program of the School of Industrial Management.

Students present were Donald A. Burress'55, John C. Lindenlaub'55, Herbert M. Voss, G, Dean C. Karnopp'56, David L. Hoffman'57, Kenneth C. Maas, Jr.,'56, Richard C. Fix, G, Monroe V. Evans, Jr., G, John R. Owan'57, Jerome W. Riese, G, Larry O. Friend'57. Members present were G. Y. Anderson'24, Bob Cotton, C. L. Sollenberger, 10-44, W. Mitchell, Jr., 9-46, L. D. Smith'06, David G. Smith '31, Arnold Jakel 2–44, Fred Gruner'41, Elton E. Staples'26, Jack Monday'51, Jack Ballard'35, Edwin A. Reed'45, E. J. Van Patten'24, M. F. Biancardi'40, C. E. Meyer'36, E. Bartlett'06, H. Valiquet'03, Roland Becker'22. – CHARLES L. SOLLENBERGER, 10–44, *Secretary*, 1030 North Marshall Street, Milwaukee, Wis.

M.I.T. Club of Southern California

Thanks are due Edward R. Atkinson '33,V, for his offer of help in securing Chemical Society Abstracts for a college, and especially to J. Howard Arnold'32, X, who writes he will deliver those desired in the near future. If any Alumni reading this have technical books or files of magazines which they wish to make available for training the coming generation send them to me, and I shall pass them on with an earnest endeavor to put them in gear. We hope to have the pleasure of the presence of Mr. Arnold at a meeting here in Los Angeles.

Those who have had the opportunity of working for our Club, and on the two directories, will welcome the return of George Cunningham'27 from New Jersey, to his home at 3499 San Pasqual, Pasadena, 10. George's new position is as manager of sales for the seven Pacific Slope states for the Mathiesen Chemical Company of Baltimore. Although this will require his absence from home a great deal, we know he will be our good will agent to the other M.I.T. Clubs along the coast and a missionary to the city of San Francisco.

Lockheed was in the headlines in January with an announcement of 20 four-year scholarships of full tuition and fees for four years, plus $500.00 annually. Selection of applicants is made by committees at the various colleges on the basis of scholarship, leadership, and character. If Alumni know of worthy young men, they should write to the Director of Admissions, B. Alden Thresher'20, Room 3-108, M.I.T. Also, scholarships in applicable-to-industry courses will be given at Pomona College, Claremont, Calif.

The great place of M.I.T. in promoting education free from governmental control was strengthened by full-page ads which appeared recently in the Los Angeles *Times*, entitled "America's Miracle-free Enterprise in Action – in Southern California." One of these was placed by Holmes and Narver of which the President is James T. Holmes'14. This engineering firm, under the American plan of rewarding initiative, grew from a group of half a dozen in 1933 to a firm of over one thousand today.

Many other Alumni in our Club have built up businesses of both size and integrity, and Tech men, formerly residents in other parts of the United States, are adding about 100 annually to the rolls of the Club. They are urged to get in active contact with the 1954 officers whose names will appear in the next notes and to send their dues of $5.00 to Treasurer James S. Cullison, 6567 West 84th Place, 45, to insure receiving notices of all meetings. – HIRAM E. BEEBE, *Review Correspondent*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

CLASS NOTES

• 1890 •

In the November Newsletter we were pleased to see that "Kenneth Wadleigh, Assistant Professor of Mechanical Engineering, and 1952 winner of the Goodwin Medal for excellence in teaching" has gone to Cambridge, England, for a year as exchange professor. Inquiry at M.I.T. yielded the information that this was the second award, the first having gone to Holt Ashley'48, Assistant Professor of Aeronautical Engineering; also, that no one of conspicuously effective teaching ability was found in 1953. We can well believe that capability is so uniformly high that all might be considered outstanding; but, on the other hand, may it not be that teachers with enthusiasm and verve are rare. The head of a college physics department remarked to the Secretary recently that young men had learned "how to teach physics, but did not know physics."

Charles Sherman reports the '90 banner which he carried as Class Marshal, and which he has had in storage ever since, is the victim of moths. The Alumni Office, which has limited storage space, comments, "This is the best solution." Harold Roberts, who moved from New Jersey to Tucson, Ariz., several years ago, has come back East. His address is now 86 Edgemont Avenue, Yonkers, N.Y., care of Edwin B. Roberts. — GEORGE A. PACKARD, *Secretary*, 25 Avon Street, Wakefield, Mass. FRANK M. GREENLAW, *Assistant Secretary*, 36 Bull Street, Newport, R.I.

• 1893 •

Maurice Bigelow Biscoe, who graduated with our Class from Course IV, died suddenly following a brief illness on December 29, 1953, at the Phillips House in Boston.

After taking post graduate work at Tech in 1894, he entered the office of the late H. Langford Warren, and subsequently spent two years with Peabody and Stearns before forming a partnership with Mr. Warren and F. Patterson Smith '92 for the practice of architecture in Boston. In 1906 he went to Colorado and practiced architecture in Denver until 1918, when he came to Boston to assist the Housing Company in their industrial housing enterprise. Leaving that company in 1922, he was occupied by professional work in Denver for most of the time until 1924, when he returned to Boston and became a member of the newly established firm of Andrews, Jones, Biscoe, and Whitmore, presently doing business at 50 Congress Street, Boston, under the firm name of Andrews, Jones, Biscoe, and Goodell.

Except for the time spent in Denver, Colo., he had been actively engaged in the practice of his chosen profession in Boston right up to the time of his death. Commissions of unusual interest to him, executed while he was located in Denver, will be found in the Report of our 30th anniversary reunion meeting.

Work he accomplished locally in and around Boston includes the following buildings: The Country Club, Brookline; Tufts College New Jackson Gymnasium and Chapel; the new Newton Cemetery Chapel and Crematory; Hospital and Nurses' Home for the Massachusetts Women's Hospital; the South Boston Boys' Club, a part of the Boys' Club, Inc., of Boston; the Headquarters Building and the South End Boys' Club and Recreation Building for the Salvation Army; the Goodwill Inn and Day Nursery for Morgan Memorial; the New England Medical Center; Hospital for the House of the Good Samaritan; the Children's Medical Center; the Lincoln-Eliot School; and the Spaulding School for the city of Newton.

He was a member of the American Institute of Architects, the Boston Society of Architects, and the Cactus Club of Denver, Colo. He was exceptionally skilled in the art of water color painting — his main hobby which attracted a wide circle of admirers. In both his hobby and his architectural profession, he found expression for his artistic temperament.

Maurice will be remembered chiefly for his unassuming manner by his many friends, classmates at M.I.T., and coworkers. He is survived by his wife, the former Agnes Slocum, whom he married on November 24, 1906; three sons — Jonathan'31, VIII, Professor of Physics at the University of Maine, William Slocum, Principal of the New Memorial School, Manchester, Mass., and Arthur Gardner, teacher in the Oakwood School, Poughkeepsie, N.Y.; two daughters — Helen B. Hagquist of Ripon, Wis., Ann Katzman, Pasadena, Calif.; and six grandchildren. — FREDERIC H. KEYES, *Secretary*, Room 5–330, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 99 Chauncy Street, Boston 11, Mass.

• 1894 •

After the optimistic statement of a month ago regarding our well-known classmate, Alan Avery Claflin, it is with extreme sorrow that his death must now be reported on the 5th of January at the Deaconess Hospital in Boston. He had been at the hospital for several weeks, as indeed he had been on several previous occasions, for the observation and exploration of some rather obscure and recurrent ailment. Finally an operation was necessary. Following this he made a fair, but not rapid, recovery, and reached a point where he could go home with some assurance that his difficulties were over, and that a period of rest was now what was needed. On the morning of January 5 he rose, was dressed, and while awaiting the arrival of his wife and chauffeur, he took a short walk along the corridor of the hospital, then returned to his room and sat down in a comfortable chair to continue his wait. Then, without warning, the end came. Undoubtedly his heart, weakened by his illnesses, had suddenly ceased to function. So passed on another of our widely known and much liked classmates. Two days later a brief but very impressive memorial service was held in the chapel of the Unitarian church at Winchester, where he and Mrs. Claflin had lived for some years. His wife and two sons from New York, and many friends and business associates were present at this service. Later his body was taken to the family lot in a Quincy cemetery for interment.

Claflin had an interesting and useful career. On graduation he entered the employ of the Avery Chemical Company, founded by his uncle at Littleton, Mass. Here he developed some new products, especially those most useful in the leather and textile industries. Later, he established himself in business in Boston dealing with dyes and chemicals for textiles, and studying new processes of treatment. In this way he acquired a wide acquaintance with the industry and was frequently sought as a consultant. His interest was not confined to this line. He was very well versed in the natural resources of New England, and had made a careful study of the mineral resources of Maine. His membership in the American Chemical Society, the Society of Dyers and Colorists, and the British Society of Chemical Industry attests his interest in technical science, and he wrote numerous papers in these fields. As a member of the Class, he will be remembered for the keenness of his intellect, his fine sense of humor, and the friendliness and deep personal interest shown to all classmates. To the Secretary, his loss is a severe one. Together we had planned to make our 60th anniversary of graduation an occasion for another class reunion, and counted on Henry Warren and George Owen to join us as a reunion committee. Now we shall hope to proceed, but with a deep sense of the loss of this man whose loyalty to the Class had increased rather than diminished with the years. Surely all the surviving members of the Class will feel deep sympathy for Mrs. Claflin, and his sons, Avery and Philip.

To end these notes on a more pleasant topic, it is a relief to announce that the early history of M.I.T. on which the Secretary began work about six years ago, is now in the hands of the printer, and it is hoped that it may be in book form by the time of the 1954 Alumni Day in June. — SAMUEL C. PRESCOTT, *Secretary*, Room 16–317, M.I.T., Cambridge 39, Mass.

• 1895 •

The bells have tolled again! Willard Haskell Watkins, Course V, who passed away on November 13, 1953, was a man of prominence in the dyestuff industry. Born January 7, 1874, in Boston, Mass., of sturdy New England stock, he graduated from high school in 1891, and from the chemical course of the Institute in 1895. Immediately after graduating from Tech, he entered the dyestuff industry, in which he was active for over 50 years. Five years of preliminary experience as chemist, dyer and salesman in the dye consuming and producing industries prepared him for the association with the Schoelkopf, Hartford and Hanna Company, at that time the largest manufacturer of dyestuffs in the United States. He started with this company as chemist in their Boston office, and in 1905 was transferred

to their factory in Buffalo, N.Y., as chief chemist. Notable among achievements in the next few years was the working out of a series of dyestuffs, in co-operation with Dr. Harvey Wiley, which conformed to the specifications of the New Pure Food laws of the Theodore Roosevelt administration.

In the great expansion of the American dyestuff industry, which followed the outbreak of World War I, the Buffalo plant greatly enlarged and became the dyestuff unit of the Allied Chemical and Dye Corporation. During this period Watkins rose by progressive steps to the position of manager of the plant. During this period he also served as member and advisor on various committees and boards national and international. During the War he was a member of the Advisory Committee on Dyes attached to the War Trade Board, in which position he rendered valuable service to the dye consuming and producing industries. After the War, as a member of the United States unofficial delegation to the Reparation Commission in Paris, he served as the United States representative on the Board of Experts attached to the Dyestuff Bureau of the Reparation Commission— the Bureau charged with the execution of Annex VI, the so-called Dyestuff Annex of the Treaty of Versailles.

Returning to the United States in 1926, he presently retired for a few years from the dyestuff business; but the lure was too strong, and in 1935 he joined the technical staff of the Calco Chemical Division of the American Cyanamid Company. With his able counsel and guidance, the work of the technical laboratories at Bound Brook, N.J., was considerably expanded. He was a member of numerous professional and social societies and clubs. He served for two years as chairman of the Buffalo Section of the American Chemical Society, and thereafter represented the section as councilor on the A.C.S. General Council. He was a member of the American Association of Textile Chemists and Colorists, serving on committees concerned with the application of dyestuffs; the Society of Chemical Industry; and the British Society of Dyers and Colorists. He belonged to the Buffalo Club, and was a charter member of the Chemists' Club of New York. Willard had a lovely home and estate on Deer Isle, Maine; gardening was a special hobby. Wonderful delphinium and gallardias! He leaves his wife, Eva Farnum Watkins, a great help-mate in all of his manifold activities; two daughters, Barbara who lives in Paris, France, and Farnum (Mrs. Samuel Gilmore) of Wrentham, Mass.; also, two grandchildren, Willard H., and James Farnum Gilmore.

We learn that George R. Winslow passed away on December 6, 1953. He was with our Class for a short time, 1891 – 1892. He was interested in civil engineering, and when he left Tech, was employed as civil engineer for the California Highway Commission, at Sacramento, Calif. We have had no news from him for many years, and as far as we can learn he has been with the Highway Commission all of his professional life.

Philip Dumaresq, Course I, passed away on January 6, 1954. His address for many years has been 58 Bay State Road, Boston, Mass. He was with our Class from 1890 – 1895, but after he left Technology our information as to his work or desires is nil. The latest address of Gerard H. Matthes is 673 Broadway, New York City 12, N.Y. We had a short Christmas letter from Tommy Lothrop of Chicago, living in Glencoe, Ill. For some reason or other he has a hard time being "retired," since it appears his interest is divided between some of his business friends and his home garden. Tom will soon get accustomed to the change and enjoy the gracious relaxation of his receding years. A short Christmas poem from Frederick H. Harris tells us he is still in good condition at 720 Lincoln Avenue, Cranford, N.J. – LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

In making our adjustments and meeting our resolutions for the New Year we greet you with the wish that we may carry on as usual through another year. As "Time and tide wait for no man," your Secretaries feel that it behooves our classmates to live simply and wisely and consult your physicians for guidance. We wish to congratulate all of you who have weathered 1953, and look forward to a comfortable and relaxing 1954.

We received Christmas greetings from the following classmates, which were very much appreciated: Victor Shaw, Jack Eynon, Mrs. Charles Tucker, Mrs. Conrad Young, John Tilley, Harry Baldwin, Fred Damon, E. C. Jacobs, Hermann Lythgoe, Charles Hyde, Ralph Henry, Walter Stearns, Oscar Hedlund, Bill Clifford. Selected excerpts from a few of the greetings will aid us in keeping in touch with the gang.

From Victor Shaw: "Another year another administration, the world still in turmoil – but I hope your 'accomplishments and a full life' have brought to your hearts a measure of peace as it has to mine, this year and those to come." From Hermann Lythgoe: "Best regards from one old-timer to another. . . ." Hermann's card showed a photograph of Mt. Moran in Wyoming which he shot on a visit to Yellowstone National Park in August, 1939. From Mabel and Bill Clifford: "Your '96 class notes in The Review are always interesting. Our ranks are thinning, but our morale is still high. Mabel and I hope to get to London in the spring to see our younger son, Captain G. M. Clifford, U.S.N., on duty there at our Navy headquarters – and our one grandson."

After a long tenure in the office of Vermilya-Brown Company builders, our John Tilley, at the age of 80, was retired as of January 1, 1954, with distinguished honors. Modest John never allowed a discussion of his abilities which led to his position as consultant in air conditioning of many of New York's leading hospitals and office buildings. His retirement is well deserved, and we wish him the rest and relaxation which he so signally deserves.

Plans are under way for the '96 dinner in New York on February 26. Whereas Fred Damon is making excellent progress with his arthritis, he regretfully declines the invitation to be present as a precautionary measure against any unlooked for aggravation.

At the 300th meeting of the Alumni Council on January 18, a review was given of the progress of the Institute, including an address by Marshall B. Dalton '15, reminding the Alumni of the great need of supporting the Alumni Fund by either large or small contributions. Let our Class respond as generously as possible; it is a great and worthy cause. We have notice of the death of Harvey F. Hawley – July 18, 1953; also, Frank W. Jaques, Bath, Me. – July 18, 1953, aged 81. From G. Haskell Smith regarding the death of his father Fred Haskell Smith on November 16, 1953, we quote, "I am certain that one of the things that Dad cherished most in life was his Tech Associations." New addresses: Charles E. Stamp – P.O. Box 12, Rancho Santa Fe, Calif.; Harold S. Boardman – 39 Winter Street, Waterville, Maine.

Our letter to members of the Class, including an alphabetical list of living classmates, calls for several corrections, in spite of careful screening. We note the absence of William D. Coolidge's name. As you all know, he is very much alive, and continues to enjoy the relaxations of travel, as well as the honors which he continues to have showered upon him. These other corrections should be noted. William T. Dorrance died on April 7, 1953; Harvey Hawley died on July 18, 1953; Frank W. Jaques died on July 18, 1953; F. H. Smith died on November 16, 1953. We very much regret these errors. However, we feel the corrected list will be of service to all of us, as we scan the roster of our remaining '96 classmates. – JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Commander Hotel, Cambridge 38, Mass.

• 1897 •

President James R. Killian, Jr.,'26, in his Annual Report for 1953 writes the following paragraph: "We have another milestone to note. This new academic year is the 25th that our fellow member, Mr. Walter Humphreys, has served the Corporation as Secretary. We celebrate his quarter century of devoted service." The Class of '97 is very proud of this distinguished record of one of its members, and extends to him its hearty congratulations. Incidentally, Walter is secretary-treasurer of the National Association of Wool Manufacturers.

Word has just been received (January, 1954), without any particulars, of the death of Edward H. Woodworth, Course V, on October 12, 1953. He was formerly general superintendent of the Canadian Kodak Company of Toronto, Canada. He resided in Pemaquid Point, Maine. – JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

• 1899 •

A circular letter was mailed to all classmates early in January outlining the tentative plans of our 55th Reunion Committee. The letter asked each one of you to answer certain questions as to your

personal preferences as to headquarters, and so on. At the date of this writing (middle of January), a dozen or more replies have been received. If you have not answered when you read this note, please do so without delay. The Committee needs your suggestions. If you wish to contribute toward the expenses of the reunion, send your check for whatever amount you wish. And don't forget to enclose a note about yourself that your Secretary can use in these columns. You are the most bashful group with whom I've ever come in contact.

Ken Blake says he will be in Charlotte at reunion time but "sends his very best to all" who may inquire about him. — Frank E. Hermanns, who lives in Bronxville, N.Y., spends his summers at East Orleans on Cape Cod (lucky guy), and he and his wife will journey up from Cape Cod to be with us in June. — Charlie Greenlaw says he spends most of the year at his "ranch" in California but visits Newport, R.I., during the fall and winter. Why not reverse that, Charlie? "It's cold outside" just now. — Harriet Day Low sends best wishes but regrets she will not be able to come in person.

Miles Sherrill points out an error in the Committee's letter (Guess I made it). The name of the Hotel on Bay State Road is now called the Shelton (formerly the Sheraton). It was necessary to change its name when the Copley Plaza was renamed the Sheraton Plaza. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany 10, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston 10, Mass.

• 1900 •

This column seems to have become an obituary column, much as we would like to have it otherwise. We wish that we could get more information about our living members. We now have to record the passing of Fred Lawley. Those of us who have been attending class reunions knew Fred well, as he had not missed a reunion for the past 10 years. Fred was with us at Tech only one year. He was the scion of a family of boat builders, and, when the Spanish-American War came on in our sophomore year, Fred felt that he should aid the important war work in the family boat yard, and so left the Institute for that purpose. He was born in South Boston, the son of George F. Lawley, and grandson of George Lawley, who began building boats in Scituate at the close of the Civil War in 1865, and subsequently moved his business to South Boston. Fred attended the Boston English High School from which he graduated in 1895. He kept his interest in the school, and was the leader in maintaining his class organization, with almost monthly meetings up to the present time.

After the Spanish-American War, Fred remained in his father's shipyard, ultimately becoming president of the George Lawley and Son Corporation, which built many of the world's largest and finest yachts, including several of America's Cup defenders and such boats as the *Vanity* and the *Yankee*. The list of yachts designed and built under Fred's supervision is an impressive one, including over 90 racing and pleasure yachts. Two that he was particularly proud of were the *Sally VII* and the *Shiyessa*.

The Lawley yard had moved from South Boston to Neponset, and in 1925 Fred and his son George left the organization and established the F. D. Lawley Corporation at Germantown, taking over the boat yard which had been operated for almost a quarter of a century by the late Charles Hanley. Fred and his son operated this yard for the next eight years, after which it was changed to new management and became known as the Quincy Adams Yacht Yard.

Since his retirement Fred had been active in civic affairs in Braintree where he made his home. He served as head of the Braintree Welfare Department for many years. He was a 32nd degree Mason, a member of Dela Masonic Lodge of Braintree, Scottish Fites bodies and Aleppo Temple. Although he attended M.I.T. only a short time, he was a loyal and active alumnus of the Class of 1900.

Harry Leslie Walker, a graduate from the Architectural Course in 1900, died on January 6, 1954. Born in Chicago in 1877, he attended Armour Institute of Technology and the Chicago Art Institute. He joined our Class in our junior year. He had his own architectural office since 1902. From 1902 to 1912 he was in Atlanta, Ga. Since that time he lived in New York City. He was architect for many churches and other public buildings. Included are: First Presbyterian Church, Passaic, N.J.; Reformed Church, Bronxville, N.Y.; Christian Herald House, New York City; Public Library, Bronxville; Passaic National Bank and Trust Company; Henry W. Putnam Memorial Hospital, Bennington, Vt.; Proctor Memorial Bridge, Proctor, Vt. (a bridge of Vermont marble) and many others. He has been a member of the Architectural Board of Design, Ten Eyck Houses, Brooklyn, N.Y.; past president of Board of Trustees, Public Library, Bronxville; past member and secretary, Village Planning Commission, Bronxville. During the World War I Harry was business manager, District No. 2, Comm. on Education and Special Training, War Plans Division of the General Staff of the War Department, New York City, handling all business between the War Department and about 40 colleges and universities in connection with vocational training and Army Training Corps in New York and New Jersey.

He was a member of the American Institute of Architects and past president of the Atlanta Chapter; past president of the Church Architectural Guild of America; and member of the Architectural League of New York. He belonged to the American Arbitration Association and was an elder of the Dutch Reformed Church of Bronxville. He was the author and illustrator of the *English Parish Church*, and author of articles on church architecture, cost accounting and filing for architects. He also lectured on medieval churches, ecclesiastical symbolism, and early American architecture.

In 1903 Harry married Jessie Eloise Blanchard; they had two children, John Blanchard Walker and Mrs. James C. Mouzon, all of whom survive him.

The January Review records the death of Francis E. Cady. While affiliated with the Class of 1901, he was so closely connected with the Class of 1900 that we wish to make note of his passing in this column. — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

• 1901 •

When you receive these notes, I hope that you will have received the Class Letter in which I have put most of the late news. I, therefore, have not very much to offer for this month. I had a letter from Dan Patch'02 some time ago which told of contacting Ed Belcher, who is at 12 Lewis Street, Portland, Maine. He is still collecting and dealing in old clocks. He would like to hear from his friends.

I have just received a letter from Mrs. Francis Cady in Cleveland. I noted Frank's death on November 3 in the Class Letter. She encloses an article written by his secretary and published in *Special Libraries Monthly* (a magazine of the Special Librarians Association), from which I will quote in part. "Occasionally there flashes across the horizon of an association a personality whose contribution brings new and greater ideas for usefulness and keeps everyone so occupied that one forgets the source responsible. And then suddenly that person is gone. Such a one was Frank Cady who passed away November 3, 1953. He came into our Association almost accidentally, yet we know it must have been part of a plan. While attending a meeting of the Illuminating Engineering Society in 1923, his path crossed that of a Public Service Corporation of New Jersey Vice-president, who introduced him to our own Alma Mitchill and Public Services library. The term 'Special Librarian' mystified him but what he saw there made him coin the phrase 'Goddess of Information' for 'Special Librarian.' From that point on his association with S.L.A. is a matter of record.

"He was the first chairman of the Technology Group (now the Science and Technology Division) organized by G. W. Lee, and served two terms. This was followed by three terms as president ending in 1929, during which period he managed to inaugurate three specific activities, all of which became largely responsible for S.L.A.'s development into professional stature as an association; (1) establishment of a headquarters office with paid office assistance; (2) legal incorporation of the Association; and (3) provision for Institutional memberships. Mr. Cady was a scientist by profession and came into the special library field primarily because of its close association with the scientific world, and because the scientific library at the Nela Park plant of General Electric Company was housed in the physics laboratory where he was chief physicist.

"He had had a real career in physics before 'meeting up' with S.L.A. Armed with his B.S. from M.I.T. in 1901 and two years of post graduate work there, he took a position with the Photometric Section of the U.S. Bureau of Standards (1903-1908) in Washington, D.C. This was followed by 12 years as physicist, assistant to the director of Nela Research Laboratory.

From 1920 to 1924 he was manager of the Research Department there, and from 1924 to 1929 he was chief physicist. He lectured in photometry at Case Institute of Technology, and in partnership with H. B. Dates, was in charge of the cooperative course in illuminating engineering at Case from 1917 to 1929.

"When the physics laboratory of General Electric Company moved to Schenectady, the Cadys chose to remain in Cleveland. Never one to look back, he immediately went into a completely new field — that of salesmanship. With his engineering background he brought new and greater significance to that field, representing Postal Meter Sales Corporation (1928-1932) and the Addressograph-Multigraph Company (1932-1937). He was vice-president of the Colonnade Company from 1937 to 1943. Then He 'returned home' as research and testing engineer with the Osborn Brush Company. He found time to author a number of professional papers on photometry and radiation — and, of course, on special libraries and to play golf and bowl. He was co-editor of *Illuminating Engineer* (1925), and a member of numerous professional societies in the fields of physics, optics and electro-chemistry including Societé Francaise des Electricité and was made an honorary member of S.L.A. in 1951, a gesture which he keenly appreciated."

I have still a few items from last year's Class Letter replies which I have not been able to include. However, they are now a year old, and I will wait for this year's replies which you will have to send in with news if you want any class notes. — THEODORE H. TAFT, *Secretary*, Box 124, East Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 287 Oakland Street, Wellesley Hills 82, Mass.

• 1902 •

I have to record the death of three members of our Class: Earl P. Pitts, on May 22, 1953, Walter P. R. Pember, on December 12 1953, and Albert A. Haskell, on December 19, 1953. It so happens that Pember and Haskell were two of the first men of our Class with whom I became acquainted. Thanks to the help of Pember, I discovered the hatchway in the old Rogers Building through which one descended by a spiral stairway to the Tech lunch room. We were taking the preliminary entrance exams at which time the Institute was an unknown territory. I met Bert Haskell as he commuted from Essex and boarded the Newburyport train to Boston on the main line at the Wenham-Hamilton station. Both became good friends as the years went on.

Unfortunately for these notes, neither Pitts nor Pember answered our 50th reunion questionnaire, and we cannot give much data except that Pitts's last address was Wilmette, Ill., while Pember lived in Delmar, N.Y., and was still practicing his profession as an architect, when we last heard from him a few years ago. It is hoped that more information will be at hand before the next issue.

The following data regarding Bert Haskell is from a clipping from the local Winchester Mass., paper: "Albert Adams Haskell was the son of Francis Perkins and Lydia (Norton) Haskell. He was born in Essex, November 11, 1879, and grew up in that town, attending the Essex schools and Massachusetts Institute of Technology from which he was graduated with a degree in chemical engineering in the Class of 1902.

"For a time he taught at North Carolina A. and M. and later at Texas A. and M. before entering industry. He then practiced his profession in such widely separated places as Texas, Santa Domingo, Cuba, and the Argentine before becoming associated as a chemical engineer with the Artisan Metal Products, Inc., of Waltham, an association continuing for many years. Mr. Haskell came to Winchester in 1920 and during his long residence had been a member of the First Congregational Church.

"On September 16, 1914, he married Leslie Weatherston of Providence, R.I., who survives with a son, Albert Adams, Jr., of Las Vegas, Nev.; a daughter, Mrs. Arthur Adams Fowle of Waltham; and four grandchildren, Eleanor M. Haskell of Las Vegas, and Arthur Adams Fowle, 3d, Polly Weatherston Fowle and William Haskell Fowle, all of Waltham."

Lewis Moore, Mrs. Moore, and your Secretary attended the funeral services at the Ripley Memorial Chapel of the First Congregational Church. A donation in the name of the Class was sent to the American Cancer Society through Patch, who at the last moment was prevented from attending.

Dan writes: "Bert's death recalls to me an experience we had together which he always liked to recount. I think that at that time he was teaching in some southern school. I was working at the Newport News Shipbuilding and Dry Dock Company. I had been home for a vacation but received a telegram asking me to return as the yard wanted to get out estimates for some new vessels which were up for bids.

"We were both scheduled to leave Boston on the *Juniata* of the Merchant and Miners line at 2:00 P.M. on January 2, although neither of us knew of the other's plans at the time. It started to snow on the morning of the second, and the temperature started to drop. When two o'clock came, the storm signals were up and Captain Bond decided not to sail. At supper time the Captain announced that if any of the passengers wanted to go to a show he would agree not to sail till midnight.

"I do not know where Bert went, but, like the jay that I was, I decided to go out to see my girl again. At the North Station all the trains were running late, and I never gave the thought I should have to the return trip. Out in the country I froze one of my ears getting from the station to my girl's house. I could not have had more than a half-hour before I had to start for the last train into Boston. When I got to the station I found everything tied up and a train still due out from the city. At midnight an orchestra which had been playing for a dance at the Stoneham Armory came to the station. I was praying that the *Juniata* would be kept at the pier by the storm till I got there.

"At that time I heard a noise out at the railroad crossing, and on investigating found the snowplow of the trolley line to Winchester just shoveling out at the railroad crossing. A fellow named Tug Sweetser who had served in the Sixth Mass. with me in Puerto Rico in '98 was running the plow and took me in. I was dressed for the South and I felt as if I were going to freeze; Tug put me in a barrel of sand with a lantern between my feet, and when we reached Winchester I was able to run to the station. I learned that no trains were running, the Montreal Express being stalled. Tug took me in again and I barrelled it to Arlington. The Boston trolleys had been running enough to keep the lines open and I got to Adams Square. Here I started to run for the pier. I had not gone far when a heavy-handed cop grabbed me and wanted to know what my hurry was. I explained the circumstances and he slapped me on the back and told me to go to it.

"When I reached the dock, the boat was still there much to my relief, but the gate to the dock was locked. This is where Bert and I did the brother act. He, too, was a late arrival and could not alert any one on the pier to let him in. It was then about three in the morning. Bert was a bit taller than I was, and maybe I was a bit more supple. Anyhow, by climbing on his shoulder I could reach the top of the fence which I scaled. I then got the night watchman to come and let Bert in. Captain Bond did not sail till 10:00 Sunday morning. . . . Bert always claimed that he saved my life that night."

The new address of Clifford B. Clapp is now 273 Pearl Street, South Hadley, Mass. — BURTON G. PHILBRICK, *Secretary*, 18 Ocean Avenue, Salem, Mass.

• 1904 •

Here it is January 20 and class news for the March issue of The Review must be sent in. As usual, there is very little of it, but it is in order to say that about the time you read these lines, you will be receiving a class letter with full details on the June reunion. When you read this, daylight will last well over an hour longer, so it won't be too hard to visualize sunny June days on the Cape. Be prepared, therefore, to sign on the dotted line with an affirmative check mark.

Two copies of our senior portfolio have just been received from Arthur Willard. They will be available for inspection in June. If any of you have old items or pictures, plan to take them with you to Oyster Harbors, or send them to one of us. A card has been received from Franklin Chace, IV, stating that he is in Nassau, Bahamas, and because of poor health plans to stay all summer. We understand Nassau has many attractions, but it is hard to beat Cape Cod in June. We shall miss Frank at the reunion but in any case we hope his health improves. A card from General Holcombe tells of plans for a Florida party to include some '04 men who are wintering there. Prospective guests were Guy Palmer, Carl Underhill, Calvin Sheafe, and Currier Lang.

You have received an interesting letter from Gus Bouscaren referring to his recent Spanish sojourn and suggesting that you fatten up the purse being accumulated for our 50-year gift to M.I.T. We urge you to keep this in mind.

Just as we were passing these notes to the Review Office, the following arrived from our official Class Secretary, Henry Stevens: "To begin with, let me state that this effusion is being concocted on January 19, 1954, and if any anachronisms or other statements and comments appear herein which do not seem to be particularly adaptable when you read it in March, that may be the reason. My last communication was written on November 18, 1953, and I suppose I thought it too early to wish you all a Merry Christmas and Happy New Year, as your Thanksgiving dinners were then a future event. So now I express the hope that you had all three; a bounteous Thanksgiving feast, a Merry Christmas and a New Year which has started Happy and will continue so to be, until 1954 shall pass into history.

"The appeal or prayer for help from you fellows which appeared in my latest communication was effective. While it did not produce a spate (crossword puzzle word for flood) of letters, it so far has brought to me, four from classmates, which I shall proceed to share with you all. The sentiments expressed in them brought me much joy. It is certainly great to come back after a long period of absence such as I have experienced, to find that one has not been forgotten.

"The first letter was from Currier Lang in Norwalk, Conn., as follows: 'I was delighted to see your name at the end of the class news in the last issue of The Review and, of course, particularly happy to hear that the fog has lifted. Also, I was moved by your heartrending appeal for news. I am sending you some under separate cover that will keep you busy for a while, particularly if you read all the background material. I am looking forward to seeing you in June.'

"The news under separate cover to which his letter refers turned out to be copies of his *Norwalk Hour* giving in great detail, the dedication of a new wing to the Norwalk Hospital. The hospital was started in 1893 in a rented wooden building with two wards and six rooms which in an emergency could accommodate 20 or 25 patients, and in 60 years has grown to one of many modern brick buildings, with 350 beds, and in 1952 admitted nearly 11,000 patients. From 1940 to 1953 Currier Lang has been one of the trustees of the Norwalk Hospital Association and for this last five years has been the president of the Association retiring as president on December 9, 1953, when he was presented with a silver tray suitably inscribed with the names of the members of the Board and the following words, 'To Currier Lang; From the Trustees with their deep appreciation for his exceptional leadership and invaluable service as President of the Norwalk Hospital 1948-1953.' To us who remember those qualities of Currier in Tech 50 years ago, we feel that much of the success of his Norwalk Hospital, at least for the last 13 years has been in great measure due to his efforts. Accompanying the article, was a very good picture of Currier.

"The next letter was from Art Willard, at one time President of the University of Illinois who wrote from 1203 West Nevada Street, Urbana, Ill.: 'I have just read your letter to the Class of 1904 as of January 1, 1954. Congratulations on your return to being our active Secretary once more. It's nice to know you are still around, and will be at the reunion in June to check up on us. I don't know whether or not you have a "Senior Portfolio" of class photos, but, just in case, I am sending you one. I was a member of that committee and still have some extra copies. Shall also send one or two to Hayward for any use he can think of.'

"I duly received the Senior Portfolio to which he refers. I did not have one, probably because I did not have the price when it was published in 1904. I have been looking it over with much interest particularly in the amount of hair on the head we all had in those days. 'It ain't that way now!' You will note that as a member of the Portfolio Committee he has extra copies still. If any of you are interested, you might communicate with him and perhaps enable his committee to retire at last with no extra copies and no deficit.

"Following that, word comes from that eminent wit and jokester C. Rogerson Haynes, which is here quoted in full: 'It was a great pleasure to see your name with those of your very efficient and hard working assistants in the recent issue of The Review, and as a three-ply cord is not easily broken, we shall expect full pages of notes from now on. Answering your appeal for notes, I offer the following data which I was about to send to Carle and Gene.

" 'Either because of my persuasive eloquence or from feminine curiosity as to what a gang of septuagenarians can find to do for two days together, I am happy to report that Annette will be with me at Oyster Harbor, so one less Mr., and one more Mr. and Mrs. for your list. I am glad to see that Arthur Willard and his wife, whom I met in 1915, are planning to attend. Now if we can work on Charlie Hoy and Mrs. H., who were with us a couple of times at Old Lyme, we can have a 75 per cent attendance of Course X. [Send me his address and I will see what I can do.] Also interested to note that Paul Paine will be there. If he is, we will try to give that part of Grand Duke where the Baroness enters. "Oh – she's as sulky as a super, and she's swearing like a trooper, Oh – you never heard such language in your life. Baroness: With fury indescribable I burn. With rage I'm nearly ready to explode. . . . "

" 'On a personal basis, I retired from Binney and Smith after 19 years (added to U.S. Rubber, 25, and Boston Woven Hose, 5½ on January 1. I enclose a clipping of a very pleasurable evening, September 9, 1953, at Chicago when the Division of Rubber Chemistry, American Chemical Society, took note of my term of service as secretary. It was a total surprise. Trust a chemist to be able to keep a secret. I have no immediate plans, but after next May my summer home, Carter Hill, Clinton, Conn. Probably south of Mason and Dixon's line winters (December to April). Looking forward to the Class Day and Oyster Harbor festivities and to seeing again my fellow dodderers. P.S. Now at least you can record in the class notes – C. Haynes also wrote.'

"Here is the clipping referring to his retirement as Secretary of the Rubber Chemistry Division of the American Chemical Society which seems to indicate Charles is well thought of in places other than the Class of 1904: 'In addition to the ceremonies in connection with the presentation of the Goodyear Medal to Dr. Blake, a special tribute was paid to retiring secretary Charlie Haynes. This portion of the program was unannounced and included some remarks by Mr. Emery in which he emphasized that the success of the Society was due not to the paid staff but to the elected officers such as Charlie Haynes. The Executive Secretary also took this occasion to pay his tribute to the Goodyear Medalist, Dr. Blake. H. I. Cramer, Sharples Chemicals, Inc., a past chairman of the Division, then spoke for the seven chairmen who had served with the retiring Division secretary. In addition to reviewing Charlie Haynes's industrial career which began in 1904 with the Boston Rubber Shoe Co., and continued with Boston Woven Hose, then included the Mechanical Rubber Goods Co., U. S. Rubber and finally Binney and Smith Co., since 1935, Dr. Cramer paid tribute to Charlie's congeniality, youthfulness, and alert mind, which throughout the years accounted for the high esteem in which he is held by his host of friends in the industry and the Rubber Division. In view of Charlie Haynes's ability as an accomplished pianist and organist he was presented with a certificate for a Webster wire recorder as a token of appreciation of his service to the Division.' Good work, Charlie.

"I remember when Charlie told us he was with Binney and Smith, I asked 'who the heck they might be,' and he said, 'the largest manufacturers of carbon black in the world.' To my inquiry as to what 'carbon black' might be, he said, 'the most finely divided substance in the world. If you took all the particles of carbon black in a half-pound of it, and laid them side by side, they would make a line eight times around this earth at the equator.' I was not too much impressed, I fear, because I simply said, 'I pity the poor guy who has to lay the particles down.'

"And then I received the following from Dwight Fellows: 'It pleases me very much to see your letter to the Class in the last Technology Review and a very fine letter it was. It made me feel that I ought to accede to your request and write a little note in return. Not that I have any news of special interest, but I like to keep in touch with you anyway. I have been hoping to get out to see you long before this, but many little things have happened to prevent. I had a letter from Ralph Hayden some time ago from Battle Mountain, Nev., asking me why I, or some one, did not get down to see Walter Hadley who lived at Newtown, Conn. Therefore, the next time I went to Hartford to visit my daughter there, I took a little time off and drove down along Route 6 to Newtown some 50-odd miles away. After considerable search I found his old home on Taunton Lake Road, but learned from the present occupant that he had sold his house last August and moved to Florida, where his new address is Boulevard North, New Port Richie, Fla.; so at least I accomplished that much by my otherwise futile drive of 115-odd miles. If I get

down to Florida this winter as I plan to do, I shall certainly try to see him. Also, I am toying with the idea of going, either on my way South or on my return, via Schaefferstown, Pa., to see Bob Faulkner.

" 'This recent heavy snowfall and subsequent mercury drop to six degrees below has made me feel that I have waited too long before following the birds, and now I am thinking of leaving here maybe next Monday, driving down to find some warm weather. I can remember years ago when I was young in Northern Michigan, that the snow never got too deep, the winters never were too cold but were always wonderful; however, those days are now gone forever and this cold spell is doing me no good, so the next time you hear from me I may be down in the Everglades, but I shall be looking forward to seeing you, et al, when I return. Keep up the good work, take care of yourself, and remember me to any of the old gang whom you happen to see. With all best wishes for a Happy New Year.'

"So by what Dwight wrote, I suppose (as I write these words) he is on his way to warmer climes, and I doubt if he is back North when you read them. He went down there last winter and didn't come back much before May, if I remember correctly. It must be a great thing to be able to 'go South' for the cold weather. I find many classmates do so.

"Except for the change in Charlie Haynes' status as regards to the coming reunion, I cannot give any more information regarding it. The details at present are being handled by Carle and Gene and I do not see them often. But rest assured all is going well and the reunion is bound to be a big success. And as Charlie Haynes said in his letter, if any of you are curious to know what a crowd of septuagenarians do for two days together, why don't you come and see. You are one of those things, too, you know.

"Now you can see how much help four of your classmates can be to a poor struggling Secretary, and I hope their example will include more fellows who will try out their skill at penmanship and help us out some more. The month of June comes steadily nearer and that event for which we are so anxiously waiting will soon be here, so let these words strengthen your resolution to come to the reunion.

"In the meantime, we shall do all we can to arrange for everything to be pleasant for you. If you have any ideas about this affair, drop us a line and tell us. So long for now, and remember we'll be seeing you." – HENRY W. STEVENS, *Secretary,* Whitney Homestead, Stow, Mass. *Acting Secretaries*: CARLE R. HAYWARD Room 35-304, M.I.T., Cambridge 39, Mass.; EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston, Mass.

• 1906 •

It is always a pleasure to furnish information about a classmate whom we have not heard from for a long time. We refer to Stanley M. Udale, II, to whom the Secretary is indebted for a copy of *Carbogram* (the monthly company paper of the Holley Carburetor Company of Detroit). The following are extracts from an article in *Carbogram* entitled "Spotlighting the Stanley Udale Story": "Stanley Udale's family originally came from the border country between England and Scotland. He was born in the coast town of Lincoln, Lincolnshire, England, January 25, 1885, the eldest boy in a family of two boys and four girls. . . . Stanley after completing his studies at St. Paul's, London, entered the University of London. Quitting England in 1905, Stanley was educated in engineering at the Massachusetts Institute of Technology, worked for Baldwin Locomotive, 'Alco,' Stevens-Duryea, and Union Pacific, completing his machinist apprenticeship June 1, 1911. In his off-moments he found time to contribute articles to the *Horseless Age*. Returning to England for the George V coronation, Stanley saw something portentous in the car business and accepted a General Motors offer to return to America after refusing an offer from the Maharajah of Travancore to go to India. To Stanley's mind bigness is not synonymous with greatness. He dared to differ with H. M. Leland, then 'father confessor' at Cadillac. Udale was given the gate but two other doors were open to him. C. W. Nash invited him in, but Stan's interest in the car business apparently cooled off. He preferred gadgets now, especially carburetors.

"It was July 7, 1913, that Stanley Udale first found sanctuary with the Holley Brothers. It was a happy choice. In the early days before his admission to the bar, Stanley showed a flair for inventive genius. He played an important part in the invention of the Holley Casting Machine, the first machine of its kind to make grey-iron castings, and now extensively used by the Eaton Mfg. Co., Cleveland, Ohio. He was one of a group of five instrumental in devising the first non-icing carburetor, a modification of the Udale carburetor which Stanley invented for the British during the first world war. Perhaps all in all, he has worked on 100 inventions for the Holley Carburetor Company. Now a patent attorney with national fame, Stanley stands watch over the Holley patents with the same tenacious determination of the English bulldog saying to all and sundry, 'What we have, we hold!' Stanley Udale is very proud of the fact that he holds membership No. 50 in the British War Birds, an organization restricted to the British flyer in the first world war. As an officer in the Royal Naval Air Force, he was probably the first to drop a bomb on a German ship at sea. He served with the R.N.A.S. (R.A.F.) in London and France from September, 1915, to November, 1917. Udale, known as the Carburetor King for his invention of the 'Tom Ford' carburetor, which the British used on the Sopwith planes from 1918-1919, was the recipient in 1921 of a vote of thanks and a $500 cash prize by the British War Inventions Board.

"His wife, the former Lahvesia Packwood, whom he met at M.I.T., where she earned her bachelor of science degree in architecture, accompanied him to England and enlisted in the Woman's Volunteer Corps.

"In the field of engineering, Stanley's first major victory goes back over 50 years, when the first of the world's great dams was completed in Egypt in 1902. At the time there was wide speculation as to whether the Assuan Dam could withstand the pressure of 1,732,000 cubic yards of water without tumbling over. The renowned mathematician, Karl Pearson, contemptuously referred to the project as the Damassuan, a foolhardy attempt at irrigation that could not possibly stand up for any length of time. Stanley, still a student at Guilds College, London University, analyzed the stresses and after careful deliberation calculated that the Assuan would hold. The Dam Assuan is still in business. Udale has been upsetting the applecarts of the experts ever since. . . ."

On December 1 last, George L. Davenport was appointed assistant to chief engineer of the Atchison, Topeka and Santa Fe Railway Company (Coast Lines), with headquarters at Los Angeles. In forwarding the notice of this promotion George submitted the following: "After spending a year with the Pennsylvania Railroad, 1906-1907, I started in with the Santa Fe at San Bernardino, Calif., in 1907, moving to Los Angeles in 1910. I left the Santa Fe in 1912 and was with the city of Los Angeles for three years, coming back to the Santa Fe in 1915. Since 1921, have been in charge of hydraulic development, pumping plants, dams, fuel stations and so on, for the Santa Fe Coast Lines (west of Albuquerque, N.M.)."

The Secretary has recently received a letter from a classmate who suggests we try the following form of letter on members of the Class who have not been heard from for some time: "Dear —— : Just had a letter from —— of our Class, who says that he hasn't heard anything concerning you for many years, and is wondering if I have any information. I should like very much to hear from you, because not only is —— interested, but the rest of us would be interested, too. I would appreciate it if you would drop me a few lines, giving me any news items concerning yourself." Undoubtedly there are a number of readers of this column who would qualify to receive such a letter. If so, consider you have received it and answer accordingly.

Christmas brought the usual interchange of cards among classmates, and they all seemed to be especially attractive this year. George Hobson wrote that he is still alive and kicking, but feebly. We sincerely hope the "feebly" is only a temporary condition. Ralph Patch's greeting was a letter with a winter picture of his new house presenting a most attractive letterhead. A telephone call to Ralph discloses that he has just come home after being hospitalized for two weeks with arthritis and is better now. He probably will spend the winter in Stoneham. Frank Benham is making satisfactory recovery from an eye operation, and to date has no plans for winter travel. Jack Norton's card was a photograph of Tryon Peak, N.C. On the back of the card he suggested that the next time we ride along the Blue Ridge Parkway to let him know since he is only 40 miles south of Asheville. I am sure that invitation applies to all classmates. Jack moved to Tryon in 1950 after retiring as head chemist for the Upjohn Company in Kalamazoo, Mich. The Batchelders' card was mailed from St. Petersburg, Fla. Going South in the winter seems to be a habit with them. A most attractive card was received from the Henry Darlings from their house at Da-

marin, Wiscasset, Maine. Cards were received from Sadie Ginsburg and Vera Philbrick who live in Brookline and Hartford, respectively.

The Secretary has one death to report at this time, namely, that of Edward M. Eliot, VI, who passed away on August 26, 1953. The class record shows that he was with the Texas Light and Power in Dallas in 1913, in St. Louis in 1917, and in Detroit and vicinity since 1919. In 1935 he was listed as being with the Wright-Austin Company of Detroit. It is understood he had been in ill health for some time. – JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

A note dated January 1 from Frank MacGregor stated that he had recently returned from White Haven, Pa., where he had attended the funeral of Harold Peters Baker, who was associated with our Class in the Course in Electrical Engineering. Petie, or Horse Power Baker, as we used to call him, died suddenly and unexpectedly on last Christmas morning. He had not been in good health for some time. He was president of White Haven Savings Bank, treasurer of the Borough of White Haven for 28 years, treasurer of the Presbyterian Church for 30 years, treasurer of the School District, and generally active in civic life in the borough and the county. He never married but lived with his sister, Elsie, in White Haven.

During last December I learned through the M.I.T. Alumni Office of the death of DeWitt Clinton Ruff, a graduate with our Class in the Course in Mechanical Engineering, on September 1, 1952. I have never heard directly from Clinton since 1907, so, in order to secure information regarding him, I wrote to Healy-Ruff Company, at 2255 University Avenue, St. Paul, Minn., manufacturers and distributors of heating equipment, of which company Clinton was treasurer. Under date of last December 28 I received a cordial reply, and from this letter I am able to give the following information: He suffered a series of cerebral hemorrhages, beginning in 1951, and had been hospitalized since Memorial Day, 1952, much of the time in a semiconscious condition. He was born and grew up in St. Paul. Attended University of Minnesota for one year, then transferred to M.I.T. After graduation he spent one year in Seattle, then worked for a consulting engineer in Minneapolis for six years, and then, with Mr. Dennis Healy, Sr., formed the present Healy-Ruff Company.

He was a member of St. Paul Episcopal Church and of several clubs in St. Paul, and of Phi Gamma Delta Fraternity. He was survived by five children – two sons, one living in St. Paul and a member of Healy-Ruff Company, and one in Los Angeles, Calif.; and three daughters, one married (Mrs. Warren Hancock of Billings, Mont.), and Katharine and Rosemary Ruff of White Bear Lake, Minn., both hostesses for North Western Air Lines. Mrs. Ruff died during the 1940's, and a son, David, was killed in 1942 in Italy in a plane crash, along with 20 other Air Corps personnel.

Eugene Banfield retired from business connections with Whitin Machine Works, textile machinery manufacturers, on last December 31. He continues to live at 150 Hill Street, Whitinsville, Mass. – According to *Science News Letter* of December 12, 1953, our classmate, Clarence D. Howe, as chairman of the Committee of the Privy Council on Scientific and Industrial Research of the National Research Council of Canada, wrote *The National Research Council Review*, 1953, reporting the progress made during 1952 on the many research projects of the Council. – Early in January, Phil Walker, in Whitinsville, received a letter dated December 29, 1953, from Stud Leavell of Tulsa, Okla. Stud said that he had been ill with a heart trouble during most of 1953, but was feeling better and was leaving for Florida, with his wife, in a few days. He wrote, "Please remember me to any of the boys, as I hold very dear my friends at M.I.T." – Ed Lee's address has changed once again. It is now 3 Zia Road, Santa Fe, N.M. – Carl Trauerman, who is secretary-treasurer of the Mining Association of Montana, 505 Montana Standard Building, Butte, Mont., wrote me a cordial note on last December 23. He said that the Northwest Mining Association, comprising Oregon, Washington, Idaho, Montana, and British Columbia, at its 59th Annual Convention at Spokane, Wash., on December 4 and 5, 1953, awarded, for the first time in its history, honorary life memberships to 12 of its members "in recognition of services rendered to the mineral industry." Carl was one of the 12 receiving this honor.

You, of course, noticed in the January and February Review the articles on ceramics by our classmate, Stanley Wires. After reading the one in the January issue, I wrote Stan a note offering my congratulations on his being an author, and on January 9 I received a gracious reply from him. He said that he got one of his pictures for these articles by sending an American dollar to a photographer in Paris, and added the comment that "they evidently will do a great deal for our dollars." – BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass, PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

Bill Given's interesting and informative article, "Broadening the Horizon," appeared in the September, 1953, issue of *Dun's Review and Modern Industry*. Bill is chairman of the board of American Brake Shoe Company.

Our first dinner meeting of the 1953-1954 season was held at the M.I.T. Faculty Club on November 18 at 6:00 P.M. with the following on deck: Bunny Ames, Jeff Beede, Bill Booth, Nick Carter, Myron Davis, Leslie Ellis, Sam Hatch, Winch Health, Bill Hunter, Stiles Kedy, Linc, Mayo, Bill Medlicott, and Henry Sewell. After the usual excellent dinner, we talked over the good time we had at our 45th reunion last June and our activities during the summer. We were all interested in hearing about Linc's trip to Alaska – and that more can hear about it – Linc has kindly summarized his trip in the following letter I received from him.

"Perhaps some of the fellows would be interested in a trip Dorathea and I made last July to the West Coast and Alaska. With the arthritis that I have in my left hip joint, I figured that I wouldn't be much good lugging suitcases, getting hotel rooms, and so on, so we joined a tour conducted by Colpitts Tourist Company, and certainly made no mistake. Of course, we traveled pretty fast, but Mr. and Mrs. Colpitts . . . did everything humanly possible for our pleasure and comfort. About 50 of us left in special Pullmans for Toronto, arriving there next morning, but to our sorrow, we found it was Dominion Day, with all stores, banks, and so on, closed. After seeing the city and suburbs, we left, by train, for Port McNicoll, for the boat trip across Lakes Huron and Superior. Huron was delightful, and the passage through the locks at Sault Ste. Marie, very interesting, but on coming into Superior with its mass of white caps as far as the eye could see, I judge that over a third of the passengers were not happy for the afternoon and evening. Next morning, at Fort Williams, we changed to the Canadian Pacific Railroad for Winnipeg and the Rockies. . . . Until we got to Calgary, where we saw the first snow-capped mountains, it is just flat farming lands, and as they had had a great deal of rain, things seemed pretty well flooded. Soon we were in Banff and it is needless to mention the wonderful scenery and hotels there and at Lake Louise. . . . At Lake Louise, we had dinner with Helen and Frank Towle, who were on their way East. . . . Next morning, I was awakened at 5:00 A.M. and as our room was on the front of the hotel, we had a magnificent view of the sunrise on the Victoria Glacier. We crossed the Continental Divide by busses, and saw the double spiral tunnels where the C.P.R. tracks make two turns of over 180 degrees cut in the mountains, easing the very heavy grade in Kicking Horse Pass. Then on to the Yoho Valley and then to Emerald Lake, which is all that pictures have shown me. Here Charlie Thompson'13 and his wife, Hester, joined the party; they had left Boston four days earlier than the party, so as to have extra time at Banff and Lake Louise. We picked up our special cars at Field, and from then on the scenery was wonderful; finally, we passed through the five-mile Connaught Tunnel, one mile under the peak of Mt. MacDonald in the Selkirk Range. We then traveled by night into Vancouver, and arrived about 9:00 A.M.

"Again the ladies were out of luck, as Wednesdays are holidays for the stores. However, during the bus trip around the city, we went over the new Lion Gate Bridge which spans the entrance to the harbor, to West Vancouver, where there is a wonderful shopping center. . . . We sailed that evening on a C.P. steamer for the four-night, three-day trip up the Inside Passage to Skagway, Alaska. You just have to see it to really appreciate the trip. – No ocean swells to make the passengers uncomfortable, and both sides of the Passage lined with wonderful, sharp-pointed mountains, covered with green lodge-pole pines, coming right down to the water. Some were snow-capped, and we could see glaciers.

"We stopped at many of the towns for two or three hours; saw fish packing and canning; the many old totem poles at Wrangell (the old Russian Capital), Juneau, the present capital, and the Mendenhall Glacier (that we saw in the pouring rain), and so to Skagway. Here the '98s started for the White Pass over into the gold fields, while we made the trip on the White Pass and Yukon Railroad in so-called parlor cars (ours happened to be named 'Lake Mayo' for a lake and town up near Dawson), and as we climbed up the 3,000-foot pass, we could see the tough going that the miners must have had in the winter's snow, where so many died. At noon, we changed at Carcross to a little stern-paddle-wheel steamer for a six-hour trip to Ben-My-Chree Homestead. This place was fascinating with wonderful flower gardens for which all the loam had to be brought in, the place being surrounded with rocky waste; in fact, the wood for fire places was imported in four-foot lengths.

"Then back to Carcross, train to Skagway and the three-day trip on the boat to Vancouver. Alaska, what I saw of it, is very interesting, but I shouldn't want to live there. The cities are built very close to the water, some with planked streets, surrounded by towering mountains, and the only way out by air or water. Prices are out of this world – in Juneau, hair cut, $2.10, and a whiskey – ginger ale highball in a little orange juice glass, $.65. A home in Juneau, similar to our $12,000 ranch houses around here, was $35,000, while a one-and-a-half story house completely finished was on the market for $85,000. . . . Our boat to Victoria was delayed four hours, as there had been a wash-out on the C.P.R., and the trains just coming through, after being hung up two days, lost four hours in Victoria, but we did have time to see the beautiful city and the renowned Butchart Gardens and do some shopping. . . . The warm Pacific winds and moisture made the flowers wonderful to see; in fact, throughout the city, flower baskets hung from the electric poles. . . . The boat trip to Seattle was only about four hours, and in the morning we drove around the city and then took the train to Portland. Portland is an awfully nice city, but the real thing is driving along the Columbia River to the Bonneville Dam. At Portland, the party split—a third going to Glacier Park, while Dorathea and I went with the rest through Yellowstone.

"Our three-day trip through the Park is long to be remembered with its many wonders and mammoth hotels. I judge that the daily turnover was over 400 persons. . . . The bus driver told me that if you should walk all around the Canyon Hotel, it would measure a mile and a quarter. We left through the Cody entrance and picked up our special sleepers there. After two nights and a day, we landed at Chicago, saw some of the city and got the *New England States* for home—and it landed us right on time at Huntington Avenue Station. The long days certainly fascinated us, with the street lights being turned on about 10:30 P.M. and beautiful sunsets until 11:00. I can't say anything about the sunrises – I wasn't on deck."

Gregory Dexter spoke at the joint meeting of the American Society for Engineering Education and the Council for Professional Development last October. The following extract from the New York *World Telegram* of October 16, 1953, will be of interest: ". . . Gregory Dexter, a consulting engineer of Scarsdale, said that lack of information about engineering schools for high school graduates planning to be engineers, and the failure to attract engineering material from among the 300,000 yearly high school graduates who don't get to college has created a national demand for engineers which 'is not likely to be met for perhaps 10 years.' Mr. Dexter called on engineering colleges and the Engineers' Council for Professional Development to supply information that will provide better guidance for high school counselors and future engineers. . . . Engineering schools accept high school graduates without the intellectual qualifications and aptitudes for success in engineering, he said."

I learned from George Belcher, our Class Agent, that Dick Collins retired the latter part of February and will make his home at North Eastham on the Cape. George also said he is getting some good contributions for the Alumni Fund, but we need more. How about it? Let's keep '08 near the top.

We are sorry to report the deaths of Duncan Hooker on July 26, 1953, at Granby, Conn.; Norman Nicol, on November 13, 1953, at Millburn, N.J.; James Gallagher, on December 13, 1953, at Leominster, Mass.; and Emerson Lyford on January 6, 1954, at Middleboro, Mass. – H. LESTON CARTER, *Secretary,* 14 Roslyn Road, Waban 68, Mass. LINCOLN MAYO, *Treasurer,* 47 Alton Place, Brookline 46, Mass.

• 1909 •

We are keeping in close contact with the Reunion Committee, and at the time of going to press, we talked with Francis Loud, VI, its chairman. He advised that the Committee continues to be very active, but as yet has not reached a decision as to where the reunion is to be held. Members of the Class, however, will be notified in ample time. He urges that plans, such as for vacations, a trip to Boston, and so on, be so arranged that the reunion on Saturday, June 12, can be readily included.

Our classmate Phil Young, II, President of the Acushnet Process Company, was on the Shawmut News TV show around Christmas time. He was telling what a wonderful bank Shawmut is, and Shawmut's man was remarking about the superlative quality of the Titlist golf ball and the modern Acushnet Process Company plant where they are made. It sounded as though Phil was getting a nice bit of free advertising. Cy, as he was popularly known in the days at M.I.T., goes to his winter home in Coral Gables, Fla., in the fall returning for a look at the plant in the spring. He plans to retire in a year or two. Does that mean he will not be coming north in the spring any more? Cy will take on any one who wants to challenge him to a game of croquet on his course at Coral Gables.

Ken May, VI, writes to the Class: "You may be interested to learn that the year 1953 brought us three more grandchildren. We now have 14, eight boys and six girls. Our older daughter, Margaret, Mrs. Henry Harwood, lives in Waban, only about one mile away with her seven children. Her husband is in the coal and fuel oil business with Luther Paul and Company in Newton Centre. Our daughter, Elizabeth, Mrs. John E. Dorer, lives in Snyder, N.Y., with her four children, her husband being with DuPont in North Tonawanda, N.Y. Our son, George B. May, is assistant to the comptroller of Amherst College and lives in Amherst with his wife and three children.

"We spent Thanksgiving in Snyder and Christmas in Amherst, and as you can well realize, we are continually kept busy following anniversaries and activities of our families. This last summer my wife and I spent 24 days visiting various western National Parks, covering some 9,000 miles by train and Park buses. We went north from Los Angeles visiting Yosemite, San Francisco, and Crater Lake before leaving Portland, Ore., for home on September 4. It was our third trip to the Pacific Coast, and we had such a grand time that we can hardly wait to see even more of this intriguing area.

"As far as business is concerned, I am still dealing in securities, being associated with F. S. Moseley and Company in Boston. As you may remember, after resigning from the Massachusetts War Finance Committee, which was in charge of war loan activities in this state, I joined Whiting, Weeks and Stubbs, which firm was merged with F. S. Moseley and Company on January 1, 1953." – CHESTER L. DAWES, *Secretary,* Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* HARVEY S. PARDEE, 549 West Washington Street, Chicago 6, Ill.; MAURICE R. SCHARFF, 366 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, Wenham, Mass.

• 1911 •

Near the close of 1953, two popular '11 men died – Beardsley Lawrence, I, on December 13, in Boston, and Walter P. Welch, VI, on December 18, in New York City.

Born in Short Hills, N.J., B. Lawrence, upon graduation in 1911, became associated with T. Stuart and Son Construction Company in Watertown, Mass.; he became chief engineer in 1919 and continued in that position into the '30s. Then he became engaged in engineering research, making his home in Lincoln, until hospitalization three years ago, when he became seriously ill. Despite his hospitalization he had directed Fiberbond Laboratories, Inc., of which he was founder and president until the time of his death. In this concern he had developed an untwisted yarn suitable for many different uses. He is survived by his wife, Hilda Page Lawrence, of 32 St. Alphonse Street, Roxbury, Mass.; a daughter, Mrs. E. J. Dann of Sharon; and a son, Beardsley Lawrence, Jr., also of Sharon.

Concerning Walter Welch's death on December 18, here is the official announcement from Combustion Engineering, Inc., New York City, thoughtfully sent to me by Miss Gladys Edwards, Walter's Secretary: "It is with deep regret

that we announce the sudden death of our long time associate, Walter P. Welch. Walter's 37 years with the organization began in 1916, five years after his graduation from M.I.T. His first assignment was in the Proposition Department. Later he became associated with General Sales and rose to the position of Assistant General Sales Manager. After a few years in this position he became assistant to vice-president Albert C. Weigel. Some 15 years ago he was made office manager and occupied this post until the time of his passing. . . . His primary devotion was always to the Company's interests, and he gave himself unstintingly to the many activities for which he was responsible. For his personal characteristics, as well as for his services, he will be long remembered."

Surviving are his wife, Mrs. Helen Follansbee Welch, of 43 Horton Street, Rye, N.Y.; and a daughter, Mrs. Margery Hawks, and two sons, Walter P., Jr., and Richard, by his first wife, Grace, who died a few years ago. Walter was a member of the Advertising Club of New York, the National Office Managers Association, Sons of the American Revolution, Veterans of the Seventh Regiment, Putnam Lodge 338, A.F. and A.M., and Coveleigh Country Club of Rye.

Bob Morse wrote that his younger daughter, Peggy, who was married last June, is now living in New York City, where her husband is studying at Columbia University's School of Medicine. "Meanwhile she is working – a New York life," added Bob. "I have partially recovered from the coronary I had two years ago, but it has slowed me down to less than a walk. I still have 16 months left before compulsory retirement sets in, so I shall continue to live here in Summit, N.J., a while longer. After I retire we may live on Cape Cod. . . ."

An announcement received just before Christmas concerns another junior '11 man: "Colonel and Mrs. Charles Phillips Kerr announce the marriage of their daughter, Isabel Dabney, to Mr. William Mellinger Sausser on Saturday, the 19th of December, 1953, in the city of Washington." Best of luck!

Your Secretary's annual trip to New York just prior to mid-January to attend the annual meeting of the American Retail Association Executives has been marked for a half-dozen years now by a "Welcome to Dennie" 1911 luncheon at the M.I.T. Club at 115 East 40th Street. The 17 of us present on January 12 unanimously agreed that this year's luncheon was one of the finest yet. It marked the appearance of two prominent classmates – Bob Haslam, X, and Bill Orchard, XI, – for the first time in a number of years. President Don Stevens, II, was in rare form as master of ceremonies, flanked by his perennial associates, Phil Caldwell, I, and Dick Gould, XI. In his introductory remarks, President Don said he had personally tried to get General George Kenney, I, and Admiral Luis deFlorez, II, to attend, but George was out of town on an arthritis campaign tour, and he had been unable to reach Monk. He also expressed regrets from Bob Morse, Ralph Walker, IV, and John Scoville, IV, who had hoped to attend.

As I started my informal talk, we all stood for a moment in memory of, and respect to, the five '11 classmates and two wives who had died during the past year. I also read the Arms editorial from the London *Times*, and the sweet letter I received from Dorothy, widow of our world-known famous etcher, who died in late 1953 – John Taylor Arms.

In the talk-around Don had a contest for the greatest number of grandchildren, and the winner was Bill Orchard with 14! Larry Odell, XIV, was a close second with 12, while G. Arthur Brown, X, and Dennie tied for third with seven each. – Phil Caldwell kicked the aftermath off by saying he is still making fresh folding paper boxes, and his youngest son is now a freshman at Dartmouth. – C. R. Johnson, X, who lives near Don in Ridgewood, is still active handling raw materials for rubber compounds. He regaled us with recollections of our famous old French teacher. – Dick Gould is planning to retire as head of the sanitary department of the New York Board of Public Works on January 31, and thereafter to confine himself to consultation work. He said he had served under nine commissioners and five mayors in his long and effective service with the B.P.W.

Frank Russell, II, is still in real estate, while Dick Ranger, VIII, still heading Rangertone, Inc., said his company is now concentrating largely on magnetic tape, particularly such recordings for TV movies. – Larry Odell is still in importing, and has had quite an active market during the past 12 months.

Harry Tisdale, V, announced his retirement from American Dyewood Company in mid-November – his second job since graduation. He spent 10 years in a silk mill, and then 32-plus with A.D.C. His Scarsdale house is on the market, and he, Grace, and Harry's mother, who is now 88, are hoping to locate along the Sound near New London. – Royal Barton, VI, said he is feeling much better, following his mid-1953 illness which kept him from the informal reunion at Snow Inn. He reaches the retirement age with Ebasco in March, but the company wants him to stay, and he plans to do so.

Bill Orchard announced that he had retired on January 11, and is now a member of the executive committees of all Wallace and Tiernan affiliates. He said he is now in his second successive two-year term on the M.I.T. Corporation's appointee Visiting Committee for Civil and Sanitary Engineering.

Jim Campbell, I, looking and feeling fine, said he has now completed 40 years of consulting engineering with two fine partners, and he and the firm of Eadie, Freund and Campbell are still going strong. – Joe Harrington, VII, is due for retirement from Enjay Company, alcohols and chemicals, in May, and he said his painting hobby is still giving him wonderful relaxation and enjoyment. He and Rose are so proud of their daughter, Joanne, who has been awarded one of the traveling art fellowships given by Myron Taylor.

Bob Haslam, X, who retired three years ago from active employment with Standard Oil of New Jersey, said he really seems busier than ever. In addition to his consulting work for Esso, he has been doing a lot for the rapidly expanding W. R. Grace Company—a 102-year-old company that started in South America and expanded years ago to this country. He is also chairman of the Institute's Visiting Committee for the Division of Industrial Cooperation. Bob looked the picture of health, and said he feels fine, too.

Norman Lougee, VI, asked, "What's all this about retiring?" He is a consulting engineer with N. A. Lougee and Company. – G. Arthur Brown once again told us how much he is enjoying his work at the Pratt Institute School of Leather and Tanning in Brooklyn. He paid particular tribute to the Class President and Secretary, also to Phil Caldwell and Dick Gould for the fine assistance they give Don in arranging the annual class luncheons.

Rufe Zimmerman, IX, now retired from U.S. Steel, said he had worked for two outfits since graduation– the Institute, where he taught for a number of years along with Bob Haslam, and U. S. Steel. He said he had assumed many duties, including committee work with the American Chemical Society, research work at N.Y.U., and with the National Research Council.

Completing the circle, President Don said that since he has had to face retirement, he has acquired a real hobby in his painting and sketching, plus some fine trips with his wife. He said that he had had a letter from Louise Seeley, advising that Nat had had a nervous condition that required a change, and that a trailer-trip through Florida and Louisiana had improved his health considerably. – Frank Osborn, III, back in the States from Chile for observation at the University of Pennsylvania Hospital in Philadelphia, had hoped he might possibly join us for the luncheon, but at the last minute found he could not. He will be at his home, Walnut Road, East of Main, Box 167, Vineland, N.J., following hospitalization for an indefinite period.

Don also announced that next year he hoped the Dennie luncheon could feature an art exhibition – with Joe Harrington's and his own work on exhibit. All hands thought this would be fine; also Bill Orchard asked about the cost for space to exhibit some of his work, so we'll probably have a three-man exhibit in '55. Sara and I went out to Ridgewood, N.J., with C. R. and Don, following the luncheon, to spend the night with Don and Lois. There we met the charming Elsie deZubiria, 18-year-old miss from Cartagena, Colombia, S.A., whose father is a Phi Beta Fraternity brother of Don's. The Johnsons joined us for dinner, and in the evening we had a fine exhibition of Don's early and late paintings and recent sketches, topped off by a musical evening in which old Tech Show and M.I.T. favorites predominated.

Once again Sara and I were delighted with the many, many Christmas cards from classmates. Admiral deFlorez sent one of his fine original sketches; George Cumings, VI, sent a colorful, gay snow scene; Jim Duffy, VI, one of our great travelers, sent a card showing Santa atop the world; and Gordon Glazier's card

featured a fine Currier and Ives "Winter Morning." Long distance honors went to Frank Osborn from Potrerillos, Chile, S.A.

Lloyd Cooley, X, wrote that he saw Don Stevens when he was a delegate to the Republican convention. —Ottilie Cushman wrote that Paul, VI, is busy with Masonic work in addition to his teaching, and they still are rabid square-dancing enthusiasts. Paul was elected senior warden of Hiram Masonic Blue Lodge in Oklahoma City in mid-December. — Liv Ferris, VI, wrote on his card that he had hoped to be able to get East in time for my luncheon in New York, but "that mid-January date now seems too close with so much to do here at the plantation." He added that he was flying back to Colorado for Christmas.

Gardner George, I, who moved from Albany to Washington, D.C., writes: ". . . Some two years ago my company — the Niagara Mohawk Power Corporation, loaned me as a consultant to the Defense Electric Power Administration of the Department of the Interior. This defense agency closed last June, but there were some residual functions to be carried on. The Department of the Interior requested me to remain in Washington to take care of the matters pertaining to the national electric power industry. Having arrived at that age when custom dictates that younger men take over, it is my intention at the end of my present assignment to wend my way to Florida. . . ."

From Louis Grandgent, IV, now located at the American Embassy in Santiago, Chile, South America, with the Institute of Inter-American Affairs, an agency of the U.S.A.: "I am halfway through a two-year assignment in the Point Four program in Chile. Here I am teamed with one other man, and our special field of activity is housing. It's an acute problem here, as elsewhere. We have found our best point of contact in a group which happened to be organizing when we arrived, called the Centro Cientifico de la Virrenda (Scientific Center for Housing). It is sponsored by the University of Chile, and includes representatives of the other universities, the architectural and engineering professions, housing agencies, contractors, and others.

"There is, in fact, no problem in housing which the Chileans could not solve well by themselves, *if* they had money. Our Point Four program cannot, in fairness to the United States, provide that commodity in a big way. We are therefore devoting the small allocation of funds which we have, to small scale experiment and demonstration in several different types of low-cost housing construction. In this enterprise the U.S.A. contribution is matched by a Chilean appropriation. Best regards to you, Dennie, and greetings to classmates."

From L. G. Fitzherbert, XI, retired Boston insurance tycoon now in San Francisco: "Marj and I are visiting our daughter in California for the holidays and leave on January 11 for Japan and points west, arriving about April 1 in Italy for a few months there and in Spain. Delightful sail from New York, through Panama Canal and north in the Pacific. Regards to all."

We received a card from Carl Richmond, I, with an obit clipped from the Boston Sunday *Herald* of January 17. It read: "Waldstein — Departed this day, January 16, Julius; 184½ Summer Street Charleston, West Virginia; loving brother of Sarah Cohn of New York City, Herman S. of Chicago, William of Dorchester. Services Monday, January 18 in Dorchester." Carl phoned the brother, William, and learned that Julius, I, had died following an operation. He had been under quite a handicap due to failing eyesight, but he persistently kept going and had been in Charleston for four or five years prior to his death.

And now a couple of address changes to close: Armand H. Peycke, II, retired, 412 Greenleaf Avenue, Wilmette, Ill.; Burgess Darrow, VI, retired, 171 West Bowery Street, Akron 8, Ohio. Please act at once if, by any chance, you have not yet sent in your subscription to the current Alumni Fund for 1953–1954. We of 1911 are again making a good showing, and each year we seem to add a few new subscribers — which is a source of great satisfaction to your Class Agent. — Orville B. Denison, *Secretary,* Chamber of Commerce, Gardner, Mass. John A. Herlihy, *Assistant Secretary,* 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

Jim and Mrs. Cook and Fred and Mrs. Barker have advised that they will be at the Snow Inn for the week end of June 12. Won't you sit down now and say that you will be there, too? I believe we can count on a minimum group of 20 or 30. This is important.

In talking with Carl Rowley in Cleveland last week, he said that he would be at his summer mansion near the Snow Inn for the week end and hopes to be able to entertain us during our stay there. Carl is extremely busy, having under construction a high school, an elementary school, library, several factories, as well as a few residences.

An article by Jerome C. Hunsaker, Professor Emeritus of Aeronautical Engineering, appeared in the December issue of *Aeronautical Engineering Review* entitled "Why 1903?" Harris E. Dexter writes under the title of Vice-president in Commercial Relations of the Central Hudson Gas and Electric Corporation at Poughkeepsie. His family consists of a wife, a daughter Carolyn, and his son Harris, Jr., now serving with the Navy. He states that the greater part of his time, in addition to looking for new business, is spent in fighting "creeping socialism," which is now trying to engulf our public utilities; if successful in this attempt, he will then move on to other fields.

Ted Marceau, in a very attractive card from Clearwater, Fla., advised that at Christmas they entertained their three daughters, two sons-in-law and three grandchildren.

If you are in the vicinity of Clearwater, be sure to look up Sadie and Ted as they would be delighted to see you.

The Aero Club of New England at the official celebration of their 50th anniversary of powered flight, named Dr. Jerome C. Hunsaker, Chairman of the National Advisory Committee for Aeronautics, as New England's Man of the Year in aviation. Dr. Hunsaker was not present to receive the trophy as he was an honored guest at the Wright Memorial Dinner in Washington on that evening. Frank W. Caldwell was also a guest at this dinner. Dr. Eisenberg has given up music and medicine for the promotion of TV programs. He expects to be on the air very shortly, so keep your eyes and ears open for his show. — Frederick J. Shepard, Jr., *Secretary,* 31 Chestnut Street, Boston 8, Mass. *Assistant Secretaries*: Lester M. White, 4520 Lewiston Road, Niagara Falls, N.Y.; Raymond E. Wilson, 8 Ogden Avenue, Swarthmore, Pa.

• 1913 •

"Time marches on." The months seem to pass faster every year as we go over the "hill." Which side are you on? We have not heard. We would like to know.

Fred Murdock has finally reached the Hotel Wyoming located in Orlando, Fla. He expects to remain there until April 1. If any of you other pleasure seekers are in the vicinity of Orlando prior to that date, drop in and see the best-dressed man of our Class. Charley Brown wrote Fred that Al Brown received credit for directing the square dancing at the reunion. Charley was responsible for that enjoyable evening, performing equally as well with a piano as with a "squeeze" box. Jack Farwell also wrote Fred that he, Jack, was alive and kicking. We further learned from Charley Brown that Herbert Shaw recently was recuperating from a cataract operation. We hope, Herbert, that by the time you read this you will have fully recovered. We shall expect to see you at the next reunion, 1956 or 1957. It is noted that Ralph B. Kennard has left Chevy Chase, and now resides at 3017 Military Road, N.W., Washington, D.C.

It may be of interest to you classmates away from Metropolitan Boston to know who are the officers of your Class, or who are still actively interested in the affairs of the Institute. Our President is William A. Ready, Vice-president — R. Charles Thompson, Secretary — Fred Murdock, Assistant Secretary — George P. Capen, Treasurer — Joseph MacKinnon (also the Registrar of the Institute), Reunion Chairman — William R. Mattson. Our Class Agent of the Alumni Fund is Lawrence C. Hart, also a member of the Educational Council of the Institute.

Eugene L. Macdonald, Course I, Civil and Sanitary Engineering, is an alumni representative on the Departmental Visiting Committee, while C. Lalor Burdick is a representative for Course VII, Biology. Arthur L. Townsend, our jovial Professor, is the director at Lowell Institute and a member of the Historical Collections Committee of the Alumni Association.

Our Representative on the Alumni Council is R. Charles Thompson. On the list of Council Representatives of M.I.T. Clubs appears the name of our Spanish friend, Edward H. Cameron, representing Buenos Aires. Bill Ready represents Nashville. Also an item of interest, Brigadier Lionel H. Lemaire'13, located at Townsville, N.Q., Australia, as director of the Immigration Centre, is a member of the Educational Council of the Institute.

Jeff Rollason has been receiving further honors with the Aluminum Company of America. Write to us, Jeff, and give us the whole story. Noted in the Boston *Herald* that William Ready is still on the prowl. He was lately elected to the Board of Directors of the Browning Laboratories, Radio Manufacturers.

I wish to thank Pop Ready, Charlie Gotherman, and Bob Bonney for the candid shots of our reunion which they forwarded to me. The Editors were not able to publish these photos. — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 788, Pawtucket, R.I. GEORGE P. CAPEN, *Assistant Secretary*, 622 Chapman Street, Canton, Mass.

• 1914 •

When Brigadier General Joe Wood retired, he came back to Cambridge and did two years of advanced work at Harvard. Not to be outdone by his classmate, what does Major General Alden Waitt, retired, do? Graduate work, of course, but at no youthful college such as the United States' oldest. Alden chooses the oldest in the whole Western Hemisphere, that of San Marcos in Peru. Alden's courses include Spanish, Peruvian culture, economic geography, archaeology, and literature — all of which are taught in Spanish. He reports that the archaeological work is most interesting, and he has watched the recovery of mummies and other objects buried 1,000 years B.C., during the pre-Inca civilization. As a side line, Alden has also been doing a little consulting engineering. Currently, he is torn between this intriguing work and returning to the United States in time for our 40th reunion. He says, however, that he may have to investigate a situation across the continent in Brazil before heading northward. One thing that Alden insists on, however, is that in the future he will stay at sea level. He flew to a spot 11,000 feet up in the Andes and was greeted by a Peruvian general who took him on a sight-seeing tour of very old Inca ruins. The high altitude, together with the immediate tour, caused a bad case of Soraché or mountain sickness, which laid him low for a few days. Alden, our 40th will be strictly at sea level with rocking chairs right beside the beach of Long Island Sound.

A note recently received from Rudy Zecha tells that he was in the path of the June tornado in Worcester, Mass., and that his house was completely demolished. He does not state whether he or his wife suffered personal injuries, but in true Zecha fortitude, which he has had occasion to show before, he writes that a new home is well under way and that he expects to be with us at our 40th in June. A fine Christmas card shows Oliver C. Hall with his wife, son, and three daughters. The son, Ellsworth, an M.I.T. graduate, was married on December 31.

One of the most frequent comments that appears in notes coming in from '14 men is that they are shocked at the long list of our classmates who have died. Nor does this list cease to grow longer. One of the very tragic cases recently noted is that of Walter Scott Hughes. For some years he had been living a most happy, semi-retired life at Ojai, Calif. On December 3, while driving with his wife, he was seized with a sudden, violent heart attack, and before his car could be brought under control, it crashed into an empty parked car. Walter died two days later, and his wife received severe injuries which required extensive hospitalization. In addition to his wife, Hughes is survived by two sons and two daughters. The above information was received from O. C. Hall, whose sister, living near Hughes in California, sent the information East. Hughes's death is the third received since the class address list was compiled in late October. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. Ross H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

• 1915 •

What a Class! What a Class! The interest, spirit, camaraderie and generally good everything about 1915 is outstanding.

On January 15 at the Chemists Club, New York City, 34 classmates (no guests) had a terrific metropolitan New York Class Dinner. Hank Marion, at our Boston dinner last October, was willing to assume responsibility for organizing this dinner, and he and his committees did a monumental job in rounding up this grand bunch of classmates. At the same time, Larry Landers agreed to make dinner arrangements and certainly gave us the best of everything at this delightful club. We owe and extend thanks and many blessings to Hank and Larry.

These men were with us: Doug Baker, VI, Jerry Coldwell, VI, Bill Campbell, I, Bridge Casselman, X, Howard King, I, Joe Livermore, I, Hank Marion, VI, Frank Parsons, II, Ed Stearns, I, Burr Swain, VI, Ray Walcott, IV, Chris Wolfe, I, Louie Zepfler, V. The long-distance winners were Ben Neal from Lockport, N.Y., and Otto Hilbert from Corning, N.Y., and close competitors were Henry Daley, Saul Schneider, and Ed Whiting, from Philadelphia. Then came the Boston contingent of Larry Landers, Azel Mack, Pete Munn, Frank Murphy, Johnnie O'Brien, Wally Pike, Pirate Rooney, Frank Scully, Henry Sheils, and Elmer Waters, who went down to extend a glad hand to the New York gang. Long-time-no-see men were Stan Baxter, Ken Boynton, Louie Finck, and Bob Mitchell, and it was good to see them again. Ralph Hart had just flown in from a winter vacation in Cuba and exhibited a healthy tan. Ken Boynton is now living in New York after his world travels for General Electric. Frank Scully unexpectedly walked into the dinner on his way back from Washington with his son, Frank, Jr., adding a great deal to our conviviality. A group of us sat up late into the night talking over old times which finished off the evening in a close and friendly manner. Everyone was enthusiastic about plans for the 1955 reunion, somewhere on Cape Cod, with attendance the following Monday at Alumni Day at M.I.T. in Cambridge. This was such a responsive Class Dinner with several men indicating a desire to attend class dinners in Boston that I feel that from now on we can repeat this dinner regularly in New York. We wrote a letter of thanks to the Manager of the Chemists Club for his hospitality in making our stay there so comfortable and enjoyable.

From Merion, Pa., Grev Haslam wired: "Uncle Sam anxiously implores financial assistance by tomorrow necessary. I make successful burglary late tonight but wish I could be with you. Many skols." From Stuttgart, Germany, Herb Anderson, ordinarily a loyal attendant at these dinners, cabled: "Have fun. My best to all. Sorry missing." From West Palm Beach, Fla., Colonel Jim Tobey wrote: "How we Floridians grieve for you snowbound Eskimos. It is a trifle cool here today so we cannot bask on the beach as usual and will have to go to the dogs, the races, I mean. Best to all 1915."

In answer to our notes in the January Review, Tower Piza's sister, Mrs. Percy H. Crane, wrote: "The January Review arrived this morning and has left me quite overwhelmed and speechless. Though I wish with a full heart that Bud could know of the wonderful send-off you gave him, I am convinced that he *did* know the great warmth, generosity and loyalty which prompted it. As I cannot begin to thank you, I can only say that you have added to my tremendous pride in being Tower's sister."

Congratulations to Bill Campbell on his continued success and expanding business as a general consultant. He recently opened a Cleveland office at Room 911, Williamson Building, 215 Euclid Avenue. We still don't know what Bill does as a general consultant but wish him all the best in these endeavors.

Dozens of Christmas cards from classmates, from all over the world, warmed our hearts with the feeling of so many good friends who remember Frances and me at holiday time. It's always good to hear from you chaps. The traveling Ken and Edie King are still at it, and their clever Christmas card in the form of a map had this enclosure: "Here 'tis almost Christmas and each day we are farther and farther away from home, and family, and friends, and snow. Each day we are longing for them all, but the open road calls us and we speed on, seeking the sun. The first stop, for the holiday season, will be the Inn at Rancho Sante Fe, Calif."

J. Louis Finck, who was at the New York Class Dinner and whom we haven't seen for a long time, operates the J. L. Finck Laboratories, 440 Rogers Avenue, Brooklyn, N.Y., where he does physical and chemical research. We had hoped to see Vince Maconi of New Haven at the New York Dinner, but he couldn't make it. He wrote: "We will be cheated out of our February vacation this year due to business. However, we hope to get away in March and if we do, our stop will be nearer home than Del Ray Beach, Fla." It's tough working up north here in this winter weather, so I don't know how to be sorry for these fellows who just can't make it to Florida.

Despite two earlier coronary attacks, Harold Colby came to our Boston Class Dinner in October, and he seemed very cheerful, but shortly after in November he died. Henry Sheils and I went out to see Mrs. Colby and her family, and George Rooney and Frank Murphy headed rep-

resentatives from the Class who attended the funeral. Harold had been sales manager for the Mason-Neilan Corporation of Dorchester, Mass., for 38 years, and had lived in Milton during that time. He was a regular attendant at our Boston meetings and will be missed by all of us.

Other losses in the Class are John C. Holmes who died on March 26 at Franklin, N.H.; Dr. Ralph Cole, who died on July 6 at West Falmouth, Mass.; Dr. Carl E. Buck, who died on November 21, at Ann Arbor, Mich., and Charles G. Paine, who died on November 22 at Bangor, Maine. Our sympathies go to the families of these deceased classmates.

Our biyearly dues notice was mailed around the middle of February — not much — not often! So shower down your checks in the postage-paid envelopes. There may be a follow-up postal card but no high pressure solicitation. I am relying on your doing your little bit for 1915, and so "help Azel." — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

Here we are into March already. The good weather is just around the corner for those of us who have been dodging the snowflakes and bundling up in the zero degree temperatures in recent months. Now for the news.

In December Walt Binger was the speaker at the Annual Dinner of the Student Chapter of the A.S.C.E. at M.I.T., having been jointly invited by Professor Wilbur'26, Head of the Department of Civil Engineering, and Thomas J. Henderson, President of the Student Chapter. The dinner was in Boston and about 130 attended. The audience comprised civil engineering students of all classes and a considerable number of freshmen who had not yet chosen their courses. There was also a goodly sprinkling of professors and prominent Boston consulting engineers. The subject was "Planning in Civil Engineering." Walt says no speaker could have wished for a peppier or more responsive group to address. He writes: "My son, Bronson, who graduated from Harvard in 1952, is in the 28th Infantry Division in Stuttgart, Germany. His wife joined him as a tourist, and, when he is not on maneuvers, spends much time with her in a little apartment in a suburb. They live with a German family who speak not a word of English, and they seem already to be fairly fluent in bad German. He acquired a small English car, and when he has a weekend pass, they tour neighboring towns and countries. An excellent education for a future world in which greater understanding among peoples is hoped for."

Blythe Stason hit headline news in January. As the New York *Times* put it: "Early relaxation of the Government monopoly in atomic energy is called for in a report issued yesterday by the Atomic Industrial Forum, Inc. The stated objective is to stimulate competition and speed technological development in the field for industrial purposes. The report outlines the results of a conference conducted by the forum. Dean E. Blythe Stason, Chairman of the American Bar Association's special committee on atomic energy and Dean of the Law School of the University of Michigan, presided over the conference. . . ."

It is both interesting and pleasing that we should have this letter from Blythe Stason at about the same time as the appearance of the *Times* article: " . . . In view of the fact that I am a renegade engineer, there is but little to be said about my current activities that would be of interest to M.I.T. graduates. I can, however, mention one item that may bridge the gap between law and engineering. For several years I have been toying with the legal problems of atomic energy, serving, among other things, as a legal consultant for the Detroit Edison-Dow Chemical team, engaged under the auspices of the Atomic Energy Commission in studying the possibilities of nuclear power. As you know, the Atomic Energy Commission is currently giving consideration to changes in the Atomic Energy Act to open the way to the use of nuclear fuels in electric power plants. A few months ago a joint committee of Congress requested the American Bar Association to appoint a special committee for the purpose of studying the matter and making recommendations to Congress. The American Bar Association accepted the assignment and set up a committee of seven persons, with me as chairman. After several months of deliberation our committee prepared and filed a final report with the joint committee of Congress, recommending some rather substantial changes in the Atomic Energy Act of 1946. I found the task interesting and challenging. Concededly this is a far cry from engineering, but at least the work may have some bearing upon the future activities of engineers if, as, and when, nuclear power plants become commonplace."

Leonard Best was awarded the Annual Stuart Reed Award for service to youth by the Summit, N.J., Y.M.C.A. Also, the New Jersey Educational Association Award for distinguished service to education was presented to him at Atlantic City in November. Leonard writes: "No more grandchildren — a lot more pencils — have enjoyed renewing an M.I.T. acquaintance with Ralph Ross'17 and his family who live a few hundred yards away."

Here's an interesting letter from Eric Schabacker: " . . . I will start by saying that the most gratifying part of my life since 1916 has been that with my family. We have five children — the four oldest are happily married, and to date have presented us with 10 grandchildren. Our youngest child is a sophomore at Wilson College. Unfortunately for us, only one of our families lives in Erie, but that does give us a good excuse for frequent short vacations. After losing a good job in the abrasive industry in 1922, I came back to Erie and organized and operated, as president, the Erie Enameling Company to do job porcelain enameling. The company grew nicely over the years and is now chiefly producing architectural enamel. By 1945, it had grown beyond my meager capabilities, and I sold my interest to my partner, retaining a place on the board and a title of secretary until my resignation this year. For a short time, I tried to keep busy with community projects, but in 1946 started another enameling operation specializing in parts too small for economical production in conventional enameling plants. Our chief products here are dials for gas and water meters and for telephones and we make some special glass to metal seals. It is a small operation but has been lots of fun. . . ."

We were pleased to receive this letter from Art Shuey: "Just starting my good resolutions for '54, one of which is to keep up with my old friends. Thanks for your good wishes, and I doubly return them. I had been more or less isolated from the Class until Ralph Bennett came up here from Houston. We worked together for several years as fellow members of the Shreveport Planning Commission, and both the community and I suffered a great loss when he so suddenly passed away. Vertrees Young and I see each other about once a year. . . . I have not retired and am not thinking of any personal plans for your product, but since our three children are grown and the grandchildren are adding up, both Mary Willis and I are taking more time off for vacations than we once did. We have spent several of our recent summers in Europe and several in Mexico, and last summer went through the Northwestern United States and Canada catching up on our trout fishing. Maybe if you boys in Massachusetts continue to vote Republican, I will be able sometime to come to a class reunion."

Here's a brief and welcome note from Milton Schur: "I most fervently reciprocate your good wishes. I have no news for you at this time. As usual, I am steeped in more research problems than you can shake a stick at. One of these days I hope to find some time to think up some news which may be interesting to our classmates."

Hen Shepard keeps us up to date with this letter: " . . . I left the Stowe-Woodward Company, where I was manager of the bowling ball department, three and a half years ago, to set myself up as a manufacturers' representative. I am now selling Industrial Diamond Tools, Hardness Testing machines, and several other allied items. So far, the venture has gone well. Even though I am now my own boss, I do not find time to play as much golf as I did several years ago. Vacations are spent at our White Mountain cottage in Randolph, N.H., while spare moments at home are spent on a 1914 Stanley Steamer. . . . None of my three children is married, so I have no grandchildren to brag about. My oldest son, Henry Jr., is in the Army stationed in Puerto Rico, with seven months' more duty ahead of him. My daughter, a graduate of Hollins College, lives at home and works in the Merchants' National Bank in Boston. My youngest son is a senior at Yale, in the Naval R.O.T.C. He is due for two years' duty, probably on a destroyer, when he graduates next June. I am sorry I have not been able to attend class reunions the past several years, but hope to be with the gang this coming June on the Cape."

And then, we have this one from Frank Ross: "I received your letter asking for news, and I don't know whether it is a

sign of old age, or getting in a rut, but there hasn't been any appreciable change in the pattern of my existence since last I wrote you. . . . One thing that did happen last summer: I won the National United States Seniors' Golf Championship in June. The only trouble with that is you have to be 55 to get into it, so there's no chance of kidding anybody as to what your age may be. . . ."

This seems like an ideal time to announce the dates for our annual class reunion. We are going back down to the Cape on the week end of June 11, 12, 13, 1954, and will stay at the Coonamessett Ranch Inn. This year it has been taken over by new management and is now known as the Treadway Inn. Of interest to many will be the information that Alumni Day at Tech falls on Monday, June 14, so those who want to be on hand for Alumni Day activities will just have to go from the Cape to Boston. We will send out a complete notice of this affair very shortly; however, this will give you an opportunity to start your planning now so that you can be on hand. See you next month when we will be on hand with our regular column. – RALPH A. FLETCHER, *Secretary*, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories Inc., 463 West Street, New York, N.Y.

• 1917 •

Once more at the request of our irresistible Class Secretary, it becomes my pleasant duty to be the channel through which you may receive up-to-date news of the activities of 1917 men in the New York area. Before letting each man speak for himself, I wish to thank those who responded to my request for news. Each year the news from even the "faithful few" makes fascinating reading. I hope you enjoy it as much as I did. As usual, we will arrange the donor's comments in alphabetic order, except for those of your reporter which will be given at the end.

Enos Curtin: "I was recently elected to the Boards of Eastern Utilities Associates and Fall River Electric Company and now have the great pleasure of serving with Loosh Hill and see him periodically at directors' meetings in Boston. In July, at the invitation of the Secretary of the Navy, I flew to England via Patuxent River, Maryland; Argentia, Newfoundland, Azores, and Lagos, by Navy plane on an inspection and indoctrination trip. After a session in London and Paris, our group returned aboard the *U.S.S. Antietam*, the first aircraft carrier to have an 'angled' deck. The angled deck is a great advance in Naval aviation, as it allows a much greater utilization of the deck and greatly cuts down the possibility of crashes. I had the pleasure of flying off of it.

"I recently became chairman of the board of the American Field Service, which organization, incidentally, was responsible for my first false step toward not becoming an engineer, as I joined it in France in 1915. The original activity of the American Field Service was to provide and drive ambulances with the allied armies; however, since World War II, it has continued its efforts to create international understanding by setting up scholarships for foreign students in the United States. We now have 265 outstanding teen-agers from 16 countries studying in United States high schools and living with American families.

"During September and October, I made a tour of seven countries in Europe, also Turkey and Greece. I came back with a strong feeling that Turkey will probably become an important country. The Turks are full of confidence and ambition, are hard workers, and very anxious for United States know-how, and investment with know-how. Unlike most of the countries of Europe, they do not seem to be worried about the Russians."

Walter Harrington: "I have been retired by U.S.A.F. because of wounds received on Saipan. I was deputy chief of staff on the staff of General Willis H. Hale, C.G. of Seventh Air Force, in charge of intelligence. I am now president of Vocational Career Guidance, Inc. Our work is divided into two parts: (a) guidance of high school students to vocations of college careers; (b) employment by large industries throughout the country as industrial psychologists, consultants on personnel evaluation, supervisory and executive development. We conduct employee opinion surveys, specialize on market research, new product development, sales promotion and merchandising.

"I have built an organization of the finest industrial psychologists in the country, with a specialist in practically all fields of consumer goods, and services. One of my sons is a first lieutenant, Airborne Infantry, regular Army. The other older son is working on his master's degree in languages at Leland Stanford University, Palo Alto, Calif. We live in White Plains, N.Y."

W. Joseph Littlefield: "Since my marriage two years ago, time has passed very quickly. My wife and I have learned to play golf; we bowl and we also ski, although I am beginning to believe this may be my last winter at this sport. My work as comptroller for Financial Analysis at Johns-Manville Corporation continues to be very intriguing."

Richard O. Loengard: "The most unusual thing I have to report is that my wife and I went to Europe last September and had a very busy, interesting, and thoroughly pleasant seven weeks abroad, during which we spent some time in England, Western Germany, Holland, Paris, and the south of France. We arrived in England just at the time when rationing had virtually been abandoned, and I was extremely pleased to find that conditions there were very much better than I expected to find them, not only from the standpoint of living conditions but also from the standpoint of morale.

"In Paris Enos Curtin appeared suddenly out of the mist just as we were getting into a taxi one evening, promised to call us, and then disappeared; this being our one contact with members of the Class of '17. The last week or so of our stay was spent driving a rented Chevrolet around the south of France, a thoroughly pleasant and enjoyable experience because late in October there are few travelers, few cars on the road, the weather is still good, and you can wander along without worrying about hotel accommodations or hordes of sight-seers. A Chevrolet, being larger and more powerful than 99.2 per cent of all the other cars on the road, makes driving in France a very pleasant experience. Of course, the front-wheel-drive Citroens can get around curves a little more quickly with less wear and tear on the brakes but, I am informed, more wear and tear on the human frame."

Howard L. Melvin: "Five years after graduating from Washington State College, Mrs. Melvin, my son, and I arrived at M.I.T. to work under D. C. Jackson, Dr. Kennelly and Professor Clifford. Since 1917 my entire career has been in the electric utility business with companies formerly in the Electric Bond and Share System – first, the Utah Power and Light Company, Salt Lake City, then Washington Water Power Company, Spokane, and since 1925, in the New York office with Ebasco Services, Inc., at Two Rector Street.

"In the Ebasco organization, whose oval trade mark of 'Engineers-Constructors-Business Consultants' is to be found in all parts of the U.S. and many worldwide locations, I am chief consulting engineer. My staff of consulting engineering specialists are engaged in practically every type of gas and electric utility problem. One of the most important functions is the planning of systems from the customers service to the raw energy resources including distribution, transmission and production plants as a foundation for the extensive work of the design and construction departments of the company. Management of the design, construction and placing in operation of the power system that Ebasco planned for the country of Greece under the Marshall Plan is a rather unique job under my general direction at the present time.

"For pleasure I am a week-end golfer at Upper Monclair Country Club, go trout fishing in Maine or out West when I get a chance, and make an interesting collection of stereo 3-D slides as I travel."

A. R. Morton: "In recent years I have been an electrical project engineer with the H. K. Ferguson Company, engaged among other things in the design and construction of chemical plants. During the war years I was plant manager for the Ford Instrument Company (Sperry Corporation) making fire control computers for the Navy Department, and for a while afterward was chief engineer and manager for the Ansley Radio Corporation making Radar, Battle Announcing Systems, Radio, and so on. Prior to this I rose to the position of chief engineer for manufacturing at the Kearny, N.J., works of Western Electric Company. During World War I and in the post war years, I spent six years with the Navy Department, Bureau of Steam Engineering (radio), now Bureau of Ships.

"I am a senior member of the Institute of Radio Engineers, member of the American Institute of Electrical Engineers and of the National Society of Professional Engineers, and have secured professional engineering licenses in New York, New Jersey, and Ohio. The 175-year-old family homestead an ideal vacation land and a chance for wife, Esther, to paint nature,

collect antiques and entertain during the summer."

William D. Neuberg: "I have been made president of John Clarke and Company, Inc., 420 Lexington Avenue, New York City, manufacturers of "Endew" – a mildew preventive. During the first 30 days of operation at Miami, Burdine's Department Store sold 10 gross of Endew and since that time we have received more than a dozen orders. If any of our classmates are sojourning in the South, I will be pleased to direct them as to where they can obtain a supply of Endew, so that they may not be troubled from mildew or musty odors. I appreciate this opportunity to get in a commercial and to wish everyone a Happy New Year."

C. D. Proctor: "I have been holding off to see if I would run into anyone that would add news, and sure enough, this morning I received a card from Potts Mehaffey, long lost, who gives his address as Fayetville, R.F.D. #1, Franklin County, Pa. Except for you and Joe Littlefield, I do not recall running into any classmates anywhere in the Western Hemisphere, so I will cover my doings. But first, let me say that I got a note from Ted Stahl reporting that his daughter was recently married.

"We took our usual winter vacation last February sailing on the S/S *Santa Monica* of the Grace Line touching at ports in Venezuela and Columbia. This was rather a de luxe freighter cruise as the ship was very commodious and air-conditioned for passengers. We were gone just 15 days total out of New York missing one stop and a couple of days as a result of the tug boat strike at the time. This year we are scheduled to sail out of New York January 29 on the S/S *Alcoa Ranger* bound for the Virgin Islands, etc. with a passenger list of 9 instead of 41 of last year. This will make the 7th Caribbean Cruise with our same traveling companions. I am still working out of 30 Church St., but have come to the 'magnesium ladder stage' in my country living."

K. C. Richmond: "Much as I would like to contribute, there is nothing I can say for the class notes. I am in very good health for my age. My family is large, active, and far-flung. My work is a continuous challenge [Ken is vice-president and treasurer of Abraham and Straus, Brooklyn, N.Y.], and I have scope to accomplish whatever seems right to do. Because our business is big, I do not move out of it for anything I need, and because it is off the beat for engineers, I seldom meet any of the 1917 Class."

Thorndike Saville: "I have a number of activities under way which may be of interest to members of the Class. I am currently vice-president of Engineers Joint Council, which as you know, is an association of eight of the largest engineering societies in the country. For the past two years I have been chairman of the Committee on Education of Engineers Council for Professional Development, the committee which is responsible for the accreditation program among the engineering schools of the country. I have kept up my professional concern in the field of water resources, particularly coastal erosion and hydrology and act as consultant to various interests. I am engineer member of the State Public Health Council of New York State, and am engineering consultant to the National Science Foundation. I am active on a number of committees of engineering groups."

R. H. Scannell: "It is noted, not without some envy, that most 1917 men have become tycoons. Having studied architecture, I became an architect. Finding it is a pleasant occupation and lacking energy or imagination to progress further, I am still designing homes and other structures. It is said that a good architect is one who can get jobs. Measured by that yardstick, we have been moderately successful for a small office concentrating chiefly on residential work, some of which is still traditional, more of which is transitional, and none of which is Frank Lloyd Wrightish.

"My family consists of one son and one daughter, neither married, and their mother, still my charming wife. We have lived in Mount Vernon, N.Y., for 20 years, and my office in Bronxville, N.Y., has been in operation for 25 years. I am a director of the Bronxville Rotary Club and a member of the Bronxville Field Club, and a past president of the Westchester Chapter, American Institute of Architects."

Alan P. Sullivan: "I am afraid I have not much to offer in reply to your appeal for class notes material. In regard to classmates, I visit with Ed Rounds once or twice a year and see Dave Waite occasionally since he is friendly with some of my relatives whom I visit in his home town of Bristol, Conn. Because I have about seven more years before retirement, I regard with envy those class members who have already achieved that happy state. However, I have prepared for the day when it comes by interesting myself in the collecting and repairing of antique clocks and watches. Followers of this hobby have an excellent organization called the National Association of Watch and Clock Collectors which holds national and sectional meetings periodically. Members come from all walks of life, and there are several M.I.T. men among them but as far as I know, no classmates other than myself are on the roster.

"As to business, I am still connected with the Cities Service Research and Development Company and am engaged in combustion instrumentation. At present I am concentrating on applications to the steel industry."

Your New York Reporter: 1953 has been a busy year for the McNeills, the major events being: An early retirement for yours truly followed by the setting up of a business consulting office at 270 Park Avenue, N.Y.; a very pleasant summer at the Jersey shore with the grandchildren and family; and a very interesting and busy four months since September consulting with companies on plans for reorganization, establishing control procedures, and so on. A goodly portion of this consulting work has been for Arthur D. Little, Inc., who, because of a rapidly expanding business has been utilizing the services of one or two outside "old men" of experience.

Here's a suggestion: If you don't want to retire at 65, then retire at 60 ± two years, and get a head start on something interesting and constructive to keep you as busy as you want to be for another 10 to 20 years. After reading about Walter Harrington's professional activity, and hearing about Lobby's recent engagement and forthcoming marriage next June, I am sure that Penn Brooks is not the only '17 man who can say that life begins at 60 ±. – WINFIELD I. MCNEILL, *Special Correspondent*, 270 Park Avenue, N.Y. RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston 10, Mass.

• 1918 •

With wit, logic, and learning, Royal Barry Wills addressed the Newton Rotary Club on his favorite subject. The newspaper said that Bill has designed over two thousand ranch-type houses, and was one of the original designers of same. Anyway, we know he has designed one for a neighbor in our town, and it is a lovely little dwelling with all the comforts, plus a superb view of Mt. Monadnock. From Gretchen, we have received a four-page leaflet concerning The Thomas School (and never forget that definite article). Gretchen, it appears, is the degree-carrying member of the staff, not to be confused with the faculty. Her official title is secretary. What intrigues us most in the School Calendar, which we have studied with arch curiosity, is "May 31 Scholarship Lunch, Field Day." What, pray tell, is a scholarship lunch? Ham on rye?

Colonel Granville B. Smith has gathered up his lares and penates to trek across the country again. Leaving Two Rock Ranch, at Pethuma, Calif., his new address is 4838 Rodman Street, N.W., Washington, D.C. Also among those who gain perspective by a change of scene is Clarence Richards who has gone from South Front Street, Columbus, Ohio, to P.O. Box 501, Cocoa Beach, Fla.

Through the courtesy of Carlton Tucker, whom we met in the crush of the Cambridge subway during rush hour, comes the news of Arthur Russell's death. He died in his sleep on December 10, with no apparent warning whatever of any impairment in his excellent health. To anyone who has watched a loved one go through months of suffering, so easy a death is a blessing in many ways, but the shock to the immediate family is something else again. May those who suffer loss like that look to the past with gratitude, and to the future with courage. – F. ALEXANDER MAGOUN, *Secretary*, Jaffrey, N.H.

• 1919 •

About three months after this issue, our Class will be meeting at Wentworth-by-the-Sea, Portsmouth, N.H., about 58 miles from Cambridge, for our 35th-year reunion. The hotel selected has an excellent reputation for cuisine and room accommodations, and the facilities are good for golf, tennis, swimming, sailing and general loafing. This is the first reunion for the Class of 1919 which the wives will attend. Our committees are actively at work preparing for a most interesting program and, most important, for drawing together a large attendance of those with whom all of us will be anxious to visit and talk over old times, and, of course, for having everybody meet our wives. The

committee still plans on meeting everyone either at the railroad station, at the airport, or in whichever way they arrive in Boston.

Don Kitchin is on the Alumni Council, never misses their monthly meetings, and has recently been nominated to the Executive Committee of the Council. He is also Alumni Day banquet chairman for 1954. Until just recently he was chairman of the National Research Council Conference on Electrical Insulation. He has bought a fine little house on a pond in Winchester, Mass., 16 Chesterford Road. One of his hobbies is making his own record blanks and recording from FM. He also loves the outdoors and says that he walked 190 miles during the period from the week before Thanksgiving to the first week of January.

Fred Given attended a meeting of the Technology Club of New Mexico in December, where our good friend Harold E. Lobdell'17 was the guest of honor who brought them up to date on progress in Cambridge. Fred was delighted to meet Ken Pike and Mrs. Pike, who are well-established residents of Santa Fe.

From California Fred Hewes writes: "Please note my change of address (344 Thurston Avenue, Los Altos), incident to the incorporation of the area where I am enjoying retired life. It is wonderful to hear from you and others of our Class in The Technology Review. I hear regularly from Roger Hall and Ed Pickop. Has anyone heard lately from Chick Huang, I? I have not seen his name in class notes for years."

Earl Stevenson was on the program of the American Association for the Advancement of Science at its 120th meeting in Boston, December 26 to December 31, 1953. Bill Banks is now living on Central Road, Rye Beach, N.H.

Maurice Michaels and his younger son, David, are partners in Michaels Manufacturing, Bloomfield, N.J. David is a sport car enthusiast, and Maurice says his own hobby is following David's racing activities. His other son, Roger, is married and has a daughter eight years old. Maurice's wife is active in buying and selling antiques. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

• 1920 •

Heard from at Christmas time by Christmas cards were those perennial dependables, Chuck Reed and K. B. White. K. B. and Denise sent a card with a highly attractive Parisian flavor, as always, and apparently they are still dividing their time between Paris and Union City, N.J. Cards were also received from Bunt and Mrs. Murphy of Berkshire Industrial Farm, Canaan, N.Y., and from Buck and Mary Clark of Farmington, Conn. What causes your Secretary's annual disappointment, not to say consternation, is not the scarcity of Christmas or New Year greetings, because these seldom contain valued news. What I always hope for, and do not get, is an extra influx of news generated by the warm and friendly holiday spirit. However, I might say, dear reader, that news of you at any other time will be equally welcome.

A recent letter from Norrie Abbott mentions hearing from Bob Patterson and from Harold Hunter. Harold is with the Celanese Corporation in Rome, Ga., and his son, Ted, is in the Navy Officer's Candidate School at Newport, R.I. Archie Cochran has been named Louisville, Kentucky's Man of the Year at a recent gathering of that city's leading citizens. Archie was cited for the "many outstanding contributions he has made to the city's business and civic progress."

Gavin Taylor is with the McColl Frontinac Coal Company, 420 Royal Bank Building, Montreal. Dave Fiske's present address is 111 Broadway, N.Y. Ed Ryer is now living in Duxbury, Mass., on Washington Street. I run into Henry Hills and Erwin Harsch every now and then as they are both in the Park Square Building; Henry is with Jackson and Moreland, which company is now headed by Ralph Booth, and Erwin is chief engineer of Morton C. Tuttle Company.

I have the sad duty of reporting the death of two prominent and well-loved classmates — Ray Davis and Count Capps. Ray Davis lived in Framingham and had been with Dennison Manufacturing Company for 25 years in the Personnel Division. Count Capps was in Fort Worth, Texas and was associated with W. B. Fishburn Cleaners, Inc. He died only a few days before these notes were written, and I have no details. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

As you read these notes, it will be fiesta time in Mexico. The M.I.T. Club of Mexico, Manuel S. Vallarta, President, has arranged its sixth annual three-day party, March 11 to 13, for its only non-resident member, "El caballero de agradable personalidad" Lobby'17, and other local and visiting firemen from the States who can now enjoy the mild evenings, warm sunshine and blooming flowers which mark this time of year in our sister republic. Val is a professor at the University of Mexico, Mexico City, internationally known for his work on cosmic rays and atomic energy, a former professor at M.I.T. and an early associate of Professor Norbert Wiener in the discussion group which led to the latter's exposition of "cybernetics." Sometimes called the "Van Bush of Mexico," Val has recently been honored by being appointed assistant secretary of education of Mexico.

John J. Healy, Jr., Assistant to the Vice-president in Charge of Research, Development and Patent Activities of Monsanto Chemical Company, St. Louis, Mo., sent a most welcome letter commenting on the figures published in The Review, indicating that only 29 of the current M.I.T. freshman class of 833 students are sons of Technology men. "What's wrong with us?" says Jack, and continues: "Don't we have any children (my own situation), or have we gone sour on M.I.T. and technology in general?" We have our own personal opinion on this subject but will refrain from any editorial comments on Jack's question pending receipt from you, dear reader, of any answers you may wish to send us, expressing your stand on the subject. No holds are barred and all comments will be published, provided, of course, that they are printable. As noted last month, the Second Generation Club of the Class of 1921 has 53 sons and two nephews from 46 families. The existence of nine sets of brothers in the group might be interpreted as indicating that parental enthusiasm had been shared by the first of the sons to sample the current Institute fare. These 55 offspring who have entered Technology represent about 10 per cent of the number of men who entered with us as freshmen in 1917, about the same percentage of the total number who received degrees at our graduation and about five per cent of all those who were associated with the Class for one term or more throughout its undergraduate history. Our thanks go to Jack for an interesting question, and also for his complimentary remarks about the 1921 class notes.

The Reverend Samuel H. Miller, Pastor of the Old Cambridge Baptist Church, has an honorary doctor of divinity degree, awarded last year by Colgate University. Sam is one of four members of the clergy in the Class along with the Reverend Everett R. Harman of Salt Lake City, the Reverend William F. Hastings of New York, formerly of Puerto Rico, and the Reverend Williston Wirt of California, Ex-major and Army Chaplain during World War II. Sam E. Moreton, Jr., has a new home address at 706 South Tuckson Street, Brookhaven, Miss. Sam is president and manager of the Central Lumber Company and a director of the Brookhaven Bank and Trust Company and the Mississippi Forestry Association. He is active in the Lions Club and in Boy Scouting. The Moretons have a married daughter, Janis, who attended the University of Wisconsin; a son, Charles, a Georgia Tech civil engineer; a son, James, who is in school; and a granddaughter, Susan.

Jackson W. Kendall, Vice-president of Bekins Van Lines of Los Angeles, Calif., sent a fine report to bring us up to date on his family. Jack, Jr., now a Navy lieutenant, married Shirley Scotten, a Stanford University classmate, last May during his return from a second tour of duty in Korea. The younger son, Robert, continued his chemical engineering studies at Stanford under a National Science Foundation scholarship and obtained the master's degree. A member of Tau Beta Pi and Sigma Xi, he is now at Technology, where he has a research assistantship while he is working for his doctorate. Jack, Sr., says he and Marge are well, and we know they must be proud of their two sons. Dugald C. Jackson, Jr., says that, with the return of his youngest son, Dan, from Korea last year, the entire family had a reunion during the latter part of the year. Dug and Betty, their two married sons, Dugald, 3d, and David, with their wives, Elisabeth, 2d, and her husband, son Dan and the five grandchildren constitute the largest family group we know of in the Class.

It is a source of considerable pleasure to receive holiday greetings from Technology friends and classmates. We greatly appreciate the good wishes and newsy comments from Paul and Mrs. Anderson,

Bud Bryant, 10–44, Ethel and Max Burckett, Edna and Phil Coffin, Bev and Mrs. Dudley'35, Janet and Gef Farmer'22, Catharine and Harry Field, Jack and Mrs. Healy, Betty and Dug Jackson, Helene and Andy Jensen, Jack Keck'23, Marge and Jack Kendall, Frieda and Chick Kurth, Moose LeFevre, Milicent and Joe Maxfield'10, Helen and Bob Miller and their photogenic Peggy, Bobby, Betty, Jo, Kathleen and Jeanie, Wally Milne of the Institute staff, Regina and Gus Munning'22, Graciela and Helier Rodriguez, Helen and Bill Rose, Helen and Ray St. Laurent, Nell and Lem Tremaine'23, Louise and Carlton Tucker'18. The year-end report and greetings of M.I.T. Alumni Association President Ray Bond'23 enclosed a folder of alumni doings in which the Class of 1921 was naturally the most prominently featured in almost all of the news classifications, even including one which was headed "Incidental Intelligence."

George A. Chutter and your Secretary have a date in Philadelphia next June to see their sons graduated respectively from the Dental College and the Wharton School of Finance and Commerce of the University of Pennsylvania. George lives in Portland, Conn., on Middle Haddam Road (appropriately off Route 6-A), and maintains the headquarters of his manufacturers' representative firm at 15 Exchange Place, Jersey City 2, N.J. The Chutters' eldest son, Raymond, a Lehigh graduate, is with Procter and Gamble in Cincinnati, Reinald is at Pennsylvania, and the youngest boy, Roger, is in high school. Robert B. Donworth, until recently in Oak Ridge, Tenn., reports his return to Pittsburgh, where he has resumed his former duties in charge of the engineering improvement of power stations of the Duquesne Light Company. The Donworths have three children: Bob, Jr., a Yale graduate; Eleanor, who was graduated from Vassar; and James, who is still in school. Ernest R. Gordon gives his address as Route #1, Grand Junction, Colo. Samuel E. Lunden heads his own architectural office at 548 South Spring Street, Los Angeles 13, Calif. Norton G. Raymond gives a change of address from Detroit to Highland Park, Mich. Benjamin F. Williams runs the Williams Loan Company in Portland, Me.

Sumner Hayward says that his daughter, Priscilla, was graduated from Swarthmore last June and became associated with the Educational Testing Service, Princeton, N.J., following a 10-week tour of Europe. Son Sumner is with the Long Lines Department of the American Telephone and Telegraph Company in New York, having served for several years with the U.S. Army in Germany. Elizabeth keeps up her writing activities and is the author of a short story entitled "The Boy Who Had No Uncles," which has just been published in the February issue of *The Grade Teacher*. Sumner also reports a recent lunch date with George Chutter in New York. He and Elizabeth frequently see their Ridgewood, N.J., neighbors, Mal Lees'20 and Mrs. Lees'21 (Connie Nelson), whose elder son, Bruce, a Cornell graduate, is married and living in Syracuse, N.Y. The younger son, Nelson C. Lees'53, is taking graduate work at Columbia University in liberal arts subjects. Lawrence B. Richardson, a retired rear admiral and vice-president of Electric Boat Company, with headquarters in Washington, D.C., has written an article entitled "Evolution of Naval Aircraft, 1911–1954," which appeared in the December, 1953, issue of the *Aeronautical Engineering Review*.

Raymond A. St. Laurent, our Class President and Vice-president of the Rogers Corporation, Manchester, Conn., writes that he and Helen have just returned from an extended trip to the midwest. Ray sent a clipping from the Manchester paper, announcing the election of Saul M. Silverstein, President of Rogers, as secretary of the American Chapter of the Council for International Progress in Management, at the organization's annual meeting in New York last January. The occasion also marked the award to Saul by Harold E. Stassen, Director of the Foreign Operations Administration, of a Certificate of Cooperation in recognition of his two trips to Europe as part of our Government's program to increase West European production. The award, which went to 80 American industrialists, cited Saul for "furnishing technical assistance to the peoples of friendly countries cooperating to maintain individual liberty, free constitutions and peace." Saul was also selected by the group of 80 to form an "alumni association," so that their combined experiences in Europe can be preserved to aid future teams in the proposed extensions of the work to South America, Africa and Asia. Other officers elected to the Council, which was formerly known as the National Management Council, include Erwin H. Schell '12, Professor of Industrial Management, and Harold F. Smiddy'20.

William H. Rose phoned holiday greetings from the family home in Irvington, N.J., and sent his regards to all his friends in the Class. Bill is a chicken farmer in Milford, N.J., where he can be reached at P.O. Box 185-A, R.D. #1. We recently ran into Robert E. Waterman, Vice-president of the Schering Corporation, Bloomfield, N.J., pharmaceutical manufacturers. Bob has charge of the company's scientific and technical activities and is also a director. A co-discoverer with his father-in-law, Dr. R. R. Williams, of Vitamin B, he is one of the founders of the Williams-Waterman Foundation for the Control of Dietary Diseases. Bob and Mrs. Waterman make their home in Morristown, N.J., where their daughters, Mary and Janice, attend local schools.

Palmer Scott, President of the New Bedford, Mass., shipbuilding firm of Palmer Scott and Company, had a prominent display in the central theme area of the recent New York Motor Boat Show, which observed the golden jubilee of recreational boating progress. Your Secretary's daughter, Eleanor, attended the show in a group of Mariner Girl Scouts and was royally entertained at Palmer's exhibit which featured the *Marscot* 18- to 26-foot cruiser, cruisabout and tarpon models. These all have one-piece fiberglas hulls which are said to be half the weight of 2-SO aluminum with almost the same strength. The hulls are impervious to attack from marine growth or rot. Palmer also makes boats in kit form from eight- to 26-feet long with the fabricated reinforced resin type of hull as well as a series of wood boats from a six-foot child's paddle model to a 15-foot sloop. Harry Field, Vice-president and Commercial Manager of the Hawaiian Electric Company Limited of Honolulu, T.H., sent us a copy of the beautifully illustrated holiday issue of "Paradise of the Pacific" along with his Xmas alohas. Harry thinks the Class should come out to the Islands for a future reunion just as strongly as Helier Rodriguez feels that the group ought to visit Havana on a similar occasion. We certainly wish we could take the fellows up on the idea of a far-away place for the reunion.

It is with heavy heart that we record the passing of Samuel Murray Jones on January 21, 1954, and extend sincere sympathy to his family on behalf of the Class. Recently appointed assistant to the president of the Boston Edison Company, Boston, Mass., which he joined in 1945, he had previously served the company as technical assistant and later as executive assistant to the power sales manager, electric and steam sales manager, assistant director of rate research and statistics, and director of rate administration and research. He was born on March 19, 1901, in Paterson, N.J., and prepared for Technology at Paterson High School. At the Institute, he was a member of Kappa Sigma, the Electrical Engineering Society, the Class Nominating Committee, Vectors and the Freshman Swimming Team. He was graduated with us in Course VI and returned to Technology for graduate study, obtaining his master's degree in 1923. For a number of years, he served as power engineer for various public utility subsidiaries of the Commonwealth and Southern Corporation, the Alabama Power Company, and the Carolina Power and Light Company. He had also been associated with Jackson and Moreland in Boston. During World War II, he served as assistant to Dr. Vannevar Bush'16, then head of the office of Scientific Research and Development in Washington. He is survived by his wife, Norma; a daughter, Claire, who is a student at Bradford Academy, Haverhill, Mass.; a son, Malcolm, who is a member of this year's freshman class at Technology, a member of the Institute Committee and prominent in student activities; his mother, Mrs. Bertha Jones of Cambridge, Mass.; and a brother, Stewart. The Jones's home is at 18 Bonnybrook Road, Waban 68, Mass. The Class was represented at the funeral ceremonies by Chick Kurth, an associate of Murray's at Boston Edison. We are indebted to Chick as well as to Ray St. Laurent and Miss Irene Walker of the M.I.T. Alumni Register for aid in preparing these notes.

Weather: Always fair when good fellows and their ladies get together at the 1921 Class party on Alumni Day. This year the date is Monday, June 14, at the Hotel Statler, Boston, from 5:00 to 7:00 P.M., just before the Stein Banquet at the same hotel. This is your invitation to be there. — CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N.J.

• 1922 •

The January, 1954, issue of *Photography* featured an article entitled "An Executive's Hobby," telling how Crawford H. Greenewalt, President of Du Pont, has become one of the outstanding bird photographers in America. This story is recommended reading for those interested in the subject as it goes into considerable detail on the equipment and procedure. Oscar Horovitz's continued good works keep him regularly in the news. A feature article recently appeared in the Boston *Post* giving further details about Oscar's movie-making abilities. His amateur colored movies have won prizes all over the world. His film of Venice was shown in Italy, and he has recently completed two other films, one on the M.I.T. Library and another on the All-Newton Music Schools. Last year he made a film for the Red Feather Drive. Peter T. Lamont is now one of the 14 directors of the Standard Oil Company of New Jersey. The New York *Times*, on October 11, 1953, gave a fine résumé of Pete's career in the oil industry. Joseph Randall, Principal of the Franklin School in Newton, Mass., is considered an authority on the teaching of elementary arithmetic. He is one of the authors of an elementary arithmetic series and has been chairman of the committee that revised Newton's arithmetic program — a program that in its field received nation-wide interest.

Kendrick P. Coachman, for many years with the Taylor Instrument Company in Rochester, died on October 30, 1953, of a cerebral thrombosis. His death occurred only a few days after the marriage of his son, on October 24, at which he was best man. The sympathy of his classmates has been extended to Mrs. Coachman and the children.

Ab Johnson left early in February for a two-months' carrier cruise to the Mediterranean as guest of the Secretary of the Navy. His assignment — to take sound movies of the various activities and maneuvers. Previous pictures taken by Ab on the cruiser *St. Paul* were so successful that a carrier encore was insisted on.

New addresses: C. Hall Baker, 546 Shore Road, Cape Elizabeth, Maine; Edward J. O'Connor, Holt Road, Andover, Mass.; Kenneth F. Morgan, 85 Washington Street, East Orange, N.J.; Julian B. McFarland, 1660-F Valley Avenue, Birmingham 9, Ala.; Carl J. Lundborg, Anaconda Aluminum Company, Columbia Falls, Mont.; Captain Harold J. Chapman, U.S. Naval Hospital, Corona, Calif.; Philip Caplain, 718 Coral Way, Coral Gables, Fla.; Dr. Walter W. Boyd, 6701 River Road, Bethesda 14, Md. — C. YARDLEY CHITTICK, *Secretary*, 41 Tremont Street, Boston 8, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

• 1923 •

At the invitation of President Jack Zimmerman, Messrs. Bond, Tremaine, Shaw, and your Secretary met at the Williams Club in New York City on December 15. Preliminary planning was undertaken for our activities during the next five years, for the 35th-year reunion and for the report on the 30th-year-reunion. Another meeting was held in New York City on January 26. Penn Howland, XV, has graciously accepted chairmanship of the 35th-year reunion committee. He will welcome your suggestions to make that event a gala affair.

Jack Zimmerman made a flying trip to Europe in November, visiting eight countries in 10 days. He claims he made an investigation of a new method of steel manufacturing, but you can draw your own conclusions. Bobby Burns, I, flew to Scotland to examine a large earthen dam recently constructed there. He is one of our world travelers and is now in Haiti on engineering affairs. Dale E. Washburn, VI, has been named vice-president and commercial manager of the Boston Edison Company. He joined that organization immediately after graduation and has advanced steadily through rate, research, purchasing, supply, and other departments. Frank Haven, II, has been in the hospital for repairs and is making an excellent recovery — congratulations!

Stevenson Findlater, IX, whose death was reported in the February notes, lived only three hours after being struck by a hit-run driver near Pittsburgh, November 20, 1953, on his way to his nearby home. At the time of his death, Findlater was assistant to the president of the National Tube Company. He was a World War I veteran and after graduation started his career with the U.S. Steel Corporation. He was a member of various Masonic Orders, the Professional Engineers Society and the American Iron and Steel Institute.

Edwin (At the Sign of the Three Brass Balls) Schmitz, XV, has been elected one of the trustees of the Russell Library according to the Middletown, Conn., *Independent*. Since graduation he has been associated with the Standard-Knapp plant in Portland, Conn., the Sinclair Refining Company, the Riley Stoker Corporation, and C. H. Sprague and Son of Boston, and the Union Fork and Hoe Company of Columbus, Ohio. He joined the staff of Wilcox, Crittenden and Company in Connecticut last September.

John H. Perry, V, died in Wilmington, Del., on December 14. He was technical investigator for the DuPont Company and was widely known as a research chemist and chemical engineer. Among other activities, he was editor-in-chief and coauthor of the *Chemical Engineers' Handbook*.

The January issue of The Review in the column "Alumni and Officers in the News" recognized two class members — Bernard Lewis, X-B, who received the honorary degree of doctor of science from Cambridge University in England, and Robert C. Sprague, XIII-A, who has been appointed by the Senate Armed Forces Sub-committee on Preparedness to direct full-scale study of hydrogen and atomic bomb defense. Your Secretary has been elected president of the Community Chest in White Plains for 1954, and re-elected director and vice-president of the Chamber of Commerce and director of the Y.M.C.A.

Even though it seems early, be sure to send Penn Howland your suggestions for the 35th-year-reunion. Also, your Secretary can use letters to help fill out these class notes. — HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 North Broadway, White Plains, N.Y. WENTWORTH T. HOWLAND, *Assistant Secretary*, 1771 Washington Street, Auburndale 66, Mass.

• 1924 •

Not much to say here about reunion, since most of it's already been said in our reunion letters and more will follow. Suffice it to say that it looks from here like a good turnout and a whale of a good time.

Now for the news at hand. A note from Professor Calor Mota, saying that he will be with us in June, also says that he hopes to make a return visit to Spain sometime in the near future. Had a number of Christmas cards from you fellows for which a blanket thanks. Only trouble was that few of you added anything I can use in this column. Ed Wininger is still sanctifying the Nicholson Company, "Greetings from St. Nicholson"; Sam Shulits announced that he is now director of the Hydraulics Laboratory at Penn State; the Cardinals, of course, had an ornithological motif; and the Cornishes had a masterpiece of Mexican art, unfolding into a big sheet "suitable for framing."

But the great shock of the year came on an otherwise undistinguished Monday morning in the form of a telegram which read: "Announcing William Todd Robinson on Saturday [that was January 16] nine pounds. Everyone fine including father. Can he come to our 30th reunion? W. H. Robinson Jr." We wired right back that William Todd would be most welcome, and that a private room had been reserved for him right off the bar — the dairy bar, that is. Remember, at our 25th, the competition we had for the father of the youngest child? Looks as though there'd be no contest this time. An appropriate award is being prepared by a committee headed by Paul Cardinal. A business note of some importance: David J. Sullivan, whom you may remember as "Scoop," has been with DuPont since 1929, principally in the research and plant management end. He holds a number of patents in the field of rubber technology. In mid-November it was announced that he had been made sales manager of all the DuPont plants in the United States — that's quite a switch.

And here's a military note, also of some importance. It's General Zartarian now. Many of you know that Sarkis M. Zartarian who followed up his S.B. with an LL.B. and an LL.M., and was at one time an assistant attorney general of Massachusetts, began his military career on the Mexican Border in 1916. He's been in and out of wars ever since, and always where there was action going on. Evidently he got out of uniform after World War II when he was a colonel, but recently he has re-entered the National Guard, is now a brigadier general.

Couple of address changes recently, but so far haven't heard the why of them. Dick Lassiter moved south, at least as far as Glen Ridge, N.J. And Bernard Zangwill who has been a patent attorney with Westinghouse for some time, has heard

the call. He's now in Washington at the Taylor Model Basin.

This will do it for now, except for the two usual reminders: (1) June 11–June 13, 1954, at the Sheldon House, Pine Orchard, Conn. (we want to see you there); (2) 1954 Alumni Fund, $1.00 a year, hitting for a $30.00 average – at this writing it's $27.60. If you're not already, you, too, should be a Dollar-a-Year Man! – HENRY B. KANE, *General Secretary,* Room 1–272, Cambridge 39, Mass.

• 1925 •

News items for this issue are scarce but important. The Class Steering Committee met on January 20 and voted that the 30th reunion of the Class of 1925, which is scheduled for June of 1955, will be an on-campus gathering with headquarters at a conveniently located Boston hotel. Start making your plans now, reserving the period June 10 through June 13, 1955, for the biggest and best reunion to date. It was also voted that we continue our Spring Class Meeting for the third year, and a meeting is called for Wednesday, April 14, at the M.I.T. Faculty Club. Notice of this meeting will go to all class members in the metropolitan area. Any others who can be in the vicinity of Cambridge on that date, we urge to attend. Contact Ave Stanton or the Class Secretary for details.

A recent news release states that George F. Chapline, XVI, Vice-president of Fairchild Engine and Airplane Corporation of Farmingdale, N.Y., has been named a member of the Board of Trustees of Adelphi College at Garden City, Long Island.

We also call your attention to the fact that Calvin A. Campbell, Jr., XV, was among the participants at the third Annual Regional Conference sponsored by the M.I.T. Club of Detroit on January 30, 1954. – F. LEROY FOSTER, *General Secretary,* Room 5–105, M.I.T., Cambridge 39, Mass.

• 1926 •

Last week end the weather was so uncertain at Pigeon Cove that I tossed my class notes material into a brief case to have in town if the snow prevents our next week-end trek. Fired with unaccountable zeal, here I am on a Wednesday night putting the material together! I have been telling you for two or three months that Whit Ashbridge sent me one of his volumes from Caracas, Venezuela, and frankly I have been trying to boil it down. He writes such interesting letters that they just don't boil down, so I'll just quote a bit about a trip he made with his wife Gurney and son, Dick, to Maracaibo. Whit does not mention the fact that there is a Star Boat organization at Maracaibo, but the Lake Maracaibo Fleet was organized in 1931 and is very active.

To quote Whit: "In Maracaibo we stayed at the new Hotel del Lago, the most luxurious in Venezuela, with everything from air conditioning to a swimming pool. I was too busy dashing around to oil company offices in connection with prospective work to enjoy the hotel very much, but Gurney and Dick had a good swim and thought it was a fine place to be. I took the family to dinner at a place noted for its wonderful steaks, Alec's Bowling Alley. It seems that Alec used to be the head cook for one of the oil companies, I think Creole, and finally ended up by buying a bowling club in Maracaibo. In the middle, there is a dance floor, on one side the bowling alleys, and on the other side an outdoor restaurant where the thick steaks are grilled over charcoal so that you get so hungry from the smell that you can hardly wait. He gets wonderful meat from Santa Gertrudin cattle imported from the King Ranch in Texas by the Rockefeller people and raised on their ranch near Santa Barbara near the southern end of Lake Maracaibo. Unfortunately, they will not let any of this meat be brought over to Caracas as a result of the *aftosa* (hoof and mouth disease) quarantine. The steaks that we had were like the ones that could be bought in the United States in the depression period by anyone who had the money but which are now rarely seen.

"The next day we went by launch diagonally across Lake Maracaibo to La Salina, a Creole installation, and for the first time Gurney and Dick saw the great forests of oil derricks out in the lake. After a brief stop there to look at the site of a proposed shop building, we went on down the eastern side of the lake in a hired car to Los Morochas, where a new power plant is to be built and on which my company is submitting a proposal." The trip continued by car and plane into the Andes and to the desert-like Paraguana Peninsula; I only wish we had space to include the entire story. Whit certainly leads a much different kind of life than most of us and it sounds pretty interesting, especially to a cloistered New Englander like your Secretary.

Sometime ago I wrote Bill Rivers who has been in Calcutta since graduation and asked him what kind of life he leads over there. At Christmas we had a nice letter from Bill, and I'll quote a bit of it. "My type of life in business here in and out of hours, is so utterly different from the life led by you fellows in the States, or even what many people imagine it to be here, that it would take quite a lot of explaining. However, from time to time I do have some interesting experiences which I would be glad to pass on to you – when I get some spare time. Next year my home leave comes round again, but my wife and I plan to spend more time on the continent and particularly in Scotland with her people, who, like many of us, are not getting any younger. This will mean that we shall have to miss the usual June festivities around M.I.T., but we do plan to spend some time in Boston early in the autumn and look forward to seeing you again at that time; in fact, we hope to track you down to your abode at Pigeon Cove where your notes seem to be composed."

Bill, you have made two promises that I shall insist you keep – you are going to tell us about that envious life you lead in India, and you are going to visit us at Pigeon Cove. Sometimes in order to fit these notes into the allowable space, the editors have to clip here and there, and recently one of my Pigeon Cove anecdotes was clipped in the middle, so here it is again – while writing notes our ship's bell rang out – it was Kathy, the six-year-old daughter of a neighboring fisherman. Kathy had three fresh mackerel on a platter which she and her three-year-old brother were peddling. I asked "How much are they, Kathy?" and proceeded to pick out a fat one. "Twenty-five cents," replied Kathy, to which baby brother added "O-O-Oh, you're charging him five cents extra." They really learn young at Pigeon Cove to soak the nonnatives, and 25 per cent is about right whether it's a mackerel or a new roof for the house.

Samuel Prescott, Secretary of the Class of '94, recently sent me a copy of Kimberly-Clark Corporation's company magazine with classmate Jack Kimberly's photograph on the cover in color. The occasion – Jack's elevation to the presidency of the company – the fourth in its 81st-year history. The article mentions that Jack has long been a devotee of sailing and is an ardent dairy farmer, specializing in Guernseys. Our congratulations and best wishes to Jack in his new capacity.

Roger Smith sent us an invitation to the wedding of his daughter Natalie, on January 2 at Gardner, Mass. We had hoped to attend (I always enjoy weddings), but had to miss this one. Pink Salmon was there and gave us a report which made us doubly sorry we missed it. Incidentally, the new consolidated school at Gardner has its auditorium named after Roger in recognition of his many years of school committee work. Howard Humphrey recently sent us a clipping from the New York *Herald Tribune* which contained a picture of a good-looking guy named Shepard. Dave has been named 1954 chairman of the greater New York Fund's annual campaign. We take our hats off to the board that chose Dave, and know that they are assured of great success in the drive.

Now I suppose this next item has no place in class notes, but I mentioned a couple of months ago that I would tell you how to make a delicious dessert to try on the little woman – this is what I call a man's dessert, and it ain't apple pie. A friend of mine picked it up in France. Seedless grapes with all stems removed is the basis, and it takes a bowl of such cleaned but solid grapes. Pour sour cream over the grapes, and in order to mix without crushing the grapes, get right in with your hands. Put this bowl of grapes and sour cream in the refrigerator, preferably until the next day. When you serve the dessert, put a bowl of brown sugar along side and let your guests sprinkle as much of it as they wish over their serving. It doesn't taste like you think it will, but it's doggone good!

Well, here I am with the notes written a week ahead of time, I almost feel smug. I'll have to admit though that the backfile is getting a bit thin, but whenever that happens some of you always come through with a flock of letters so here's hoping for next month. Upon completing these notes we have learned that Class Agent, Chenery Salmon has just received a well-deserved promotion. At the annual meeting of his bank, the Merchants Na-

tional of Boston, he was elected vice-president. For the Class, our sincere congratulations to Pink. – GEORGE WARREN SMITH, *General Secretary,* E. I. du Pont de Nemours and Company, Inc., 140 Federal Street, Boston, Mass.

• 1927 •

Know anything about "Do-It-Yourself-ism? In a leading article in the *American* magazine for December, Phil Creden writes on "America Rediscovers Its Hands." "By working with his hands, a person can more completely forget his worries than in any other way," says Phil. "You can keep right on worrying while you watch a television program, or even while you play bridge, but if you become engrossed in manual work, your brain no longer has room for worry, fear, fatigue, and other kindred emotions. . . . Our rediscovery of our hands is one of the most encouraging developments of the mid-twentieth century."

"M.I.T. Alumni Make News," a résumé of the outstanding events recorder in the class notes, makes special note of the election of Bob Bonnar as president of the American Association of Textile Chemists and Colorists.

At the annual meeting of the American Petroleum Institute in Chicago I saw Art Connell, Vice-president of E. B. Badger and Sons Company of Boston, builders of large-scale petroleum refining equipment. Ed Damon also showed up, but he was not there on A.P.I. business. Howard W. Page has been elected a director of Standard Oil Company (New Jersey).

The United Air Lines *News* in speaking of that airline's Vice-president of Engineering and Maintenance, J. A. Herlihy, says that "he's now deep in the study of the jetliners which will be coming along in the next five or 10 years." Jack says "figuratively speaking, we have just begun. We are preparing for an entirely new and revolutionary aviation chapter. Ever higher horizons are before us."

The Glantzberg Gazette was again received at Christmas time, recording the activities of Fritz, his wife, and four children. The Gazette prints this interesting forecast for 1954: "This department will be discontinued for lack of a reliable forecaster. However, family is enthusiastic about Barksdale and hopes there will be no change." Then Fred notes in ink at the bottom, "Moving again! 5th Air Division at Rabat, French West Africa. Family goes, too."

Harold E. Edgerton, who last year demonstrated technique in electronic flash photography before the Mid-winter Meeting of Alumni in Walker Memorial this year has spoken to the Boston Stein Club on "Summer on Cousteau's Ship."

Louis L. Brega, who since 1948 has been superintendent of buildings and grounds at Rhode Island Hospital, has now been appointed general manager of Vassar College, Poughkeepsie, N.Y. It is heartening to have my annual contribution to this institution of learning safeguarded by a classmate. Any of the rest of you have daughters at Vassar? – JOSEPH S. HARRIS, *General Secretary,* Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

• 1928 •

It is with deep regret that we must record the passing of two of our classmates, Ames B. Hettrick and Edward E. Chute. Ames died on December 27; there was time only to mention the fact in last month's notes. The following account was given in the New York *Times,* December 30, 1953: "Plainfield, N.J., Dec. 29 – Ames Bartlett Hettrick, assistant manager of the newly formed pigments division of the American Cyanamid Company, died Sunday night in Union while returning home from Wellesley Hills, Mass. He was stricken as he stopped in a restaurant for dinner. His age was 49. Mr. Hettrick had been identified with the development of titanium dioxide pigments. After his graduation in 1928 from Massachusetts Institute of Technology, he joined the Stone and Webster Engineering Corporation. He became chief engineer of the Southern Mineral Products Corporation in 1931 and plant manager in 1934.

"With the purchase of this company in 1936 by the Virginia Chemical Corporation, Mr. Hettrick was appointed vice-president and general manager of the new organization. When Virginia Chemical's titanium interests were bought by the Calco Chemical Division of American Cyanamid in 1944, he took over as works manager of the plant in Piney River, Va. Two years later Mr. Hettrick was promoted to assistant manager of manufacturing for the Calco Chemical Division.

"A member of the American Society of Mechanical Engineers, and the American Institute of Mining and Metallurgical Engineers, he also belonged to the Chemists Club of New York. Surviving are his widow, the former Frances Obrian of Buffalo; three sons, John Lord, Ames B. Jr., and George H.; his mother, Mrs. George Draper Hettrick of Sarasota, Fla.; and a brother Elwood H. Hettrick of Wellesley Hills."

We are indebted to Dwight C. Arnold '27 for the following review on Eddie Chute. On Tuesday, January 5, 1954, King's Chapel in Boston was filled to overflowing with friends who had come to pay final tribute to Edward Ensley Chute. A malignant brain tumor which manifested itself by a series of headaches in mid-November was the cause of his death on January 2, 1954. Eddie Chute will be remembered by his contemporaries at M.I.T. as a most likable, capable, and altogether fine fellow. He was captain of the Freshman Cross-country Team and set the record for the mile which stood for a number of years. He was vice-president of the Class of 1928 during his sophomore year and president of his junior year. During both these years he was a prominent member of the Varsity Track and Cross-country Teams.

For the past 26 years, Eddie had been associated with the National Shawmut Bank of Boston. He served as assistant purchasing agent, manager of the transit department, supervisor of branches and supervisor of construction. He was elected an assistant vice-president in 1944, and a vice-president in 1950. At the time of his illness he was in the process of taking over the entire personnel department of the bank. He was a past president of the Bank Officers Association of Boston, an instructor in the American Institute of Banking courses in Boston, and a vice-president of that institute. He was also recognized as an authority on the operation of automobile "drive-in" banks, gaining a degree from Rutgers Graduate School of Banking in 1949 with a thesis on that subject.

Eddie was extremely well liked by his associates at the National Shawmut Bank, having been termed "the best fellow we had around here." He will be sorely missed by his brothers in Phi Beta Epsilon, his classmates at M.I.T., and at Andover, as well as by his host of other friends. Our most sincere sympathies go to his surviving wife, Phyllis, and his son, Myles. – GEORGE I. CHATFIELD, *Secretary,* 49 Eton Road, Larchmont, N.Y. WALTER J. SMITH, *Assistant Secretary,* 209 Waverly Street, Arlington, Mass.

• 1929 •

Word comes from Connecticut that Henry Giles, XI, has moved to Hartford as sanitary engineer for that city. Henry is married and has two children. He has been in sanitary engineering work most of the time since leaving Tech and seems well established in Connecticut. Norman Ballou, I, is living in Providence, R.I., while with United Shoe Machinery Corporation. Norm says he is associated with the Research Division and Law Department. George Meyers, VI-A, writes from Wyomissing, Pa.: "From leaving Tech until 1945 I was with General Electric Company in Lynn in various capacities such as designing engineer and on applied research helping reorganize the works laboratory, and administrative engineer. When the war came along I had the thrill of working on the first jet engines to fly in America, and the interesting task of helping General Motors get in production with General Electric designs.

"From 1945 to 1947 I was with Manning, Maxwell and Moore, Inc., in Watertown as assistant plant manager. When I started that job the manager was sent on vacation, and I was left to handle an eight-weeks' strike. That was my initial experience in labor relations, a field with which I have been very closely associated ever since. After Manning, Maxwell and Moore, I spent a year with the Glenwood Range Company in Taunton making gas stoves. In 1948 I became controller of the Reading Tube Corporation and was made executive vice-president in 1950. We manufacture copper and brass tubing. One of the most interesting experiences outside of work was the one last winter when I was sent to France for six weeks as a member of a top management American team to visit with various French industrialists. This was under the auspices of the National Management Council and the Mutual Security Agency. Keeping up with one's own growing family is probably as much of a task and leads to as many interesting experiences as any of the things outlined above."

Bill Cathcart, I, has made the Army a career and traveled most of the world. He is currently shifting from Newfound-

land to California where he hopes to settle down and enjoy his four grandchildren. Bill is a colonel in the Corps of Engineers. John Joyce, VI-A, is in the industrial electrical equipment business in Philadelphia after having spent considerable time with the Philadelphia Electric Company and the O'Brien Machinery Company. John has four children, lives in Drexel Hill, Pa. John Lucey, XVII, with five children, has settled down in Schenectady and writes as follows of his travels: "Following four years with General Contractors in the New England area, I went on active duty as a reserve officer in connection with C.C.C. activities and stayed at that until 1940 when I went over to construction for the Army, supervising work at Narragansett Bay, R.I., Springfield Armory, Nebraska Ordnance Plant, Wahoo, Neb., Vigo Ordnance Plant, Terre Haute, Ind., and District Engineer, Calcutta, India. Left the Army for a year in 1946 to work for General Electric Realty Corporation, but accepted a regular Army commission in 1947 and spent a year in Korea. Was returned in 1949 for physical disability but recovered nicely. Since 1950 I have been with the city of Schenectady as city engineer and director of Public Works."

Angelo M. Altieri, X-B, is living in Watertown, Mass. He is chief chemist for Tileston and Hollingsworth, paper manufacturers in Hyde Park. Harold Pease, XVII, is now a field engineer for the Factory Mutual Fire Insurance Companies, after 14 years with the Guastavino Company building those tricky arches that make people wonder why they stand up. Harold is married, with one son now in the Army, and lives in Ridgewood, N.J. Murry Brimberg, VI, writes of his doings: "Following graduation, started out with R.C.A. for a brief training period. Then, in 1930, joined New York City Radio Station WNYC. During this period, also did research work at the Columbia University Institute of Public Health. Vacationed one summer in Europe. In 1937, joined the C.A.A. as electronics engineer and, with the exception of one year as vice-president of a technical sales company, stayed till June 1953, then resigned from the position as chief of Maintenance Inspection Branch to join Burlingame Associates. During my government service, official duties took me to all states of the U.S. and to Alaska. Met my wife-to-be in 1937 (she's originally from Boston), and made the plunge in 1939 – a most pleasant one to be sure – and have resided in Washington ever since. We have two lovely daughters who keep their parents pretty much on their toes. Our outlook – a healthy democracy in a peaceful world." Murry is living in Silver Spring, Md., while in charge of the Washington office of Burlingame Associates.

Lawrence Hamlin, XI, is with Standard-Vacuum Oil Company as manager of the Marketing Engineering Department. He gets his mail in New York but travels considerably, mostly in the Far East. His two children are both in college. Distance honors to date go to Masaru Miyauchi, VI, who hails from Tokyo. Masaru writes as follows: "Since that memorable day in 1929 when I received my S.M. in E.E., I have held various jobs, to wit: raw silk importer in New York; engineer for the Japan Factory of the Otis Elevator Company, and later their export manager; construction engineer for O.C.E., G.H.Q., Far East Command during the occupation of Japan by the Allied Forces. Since April 1949, I have held the position of import-export manager for the H. Morioka and Company, which is the oldest established firm in Japan dealing in iron and steel products. We act as export agent and domestic distributor for all the leading steel mills in Japan. We import special and alloy steel as well as scrap iron, iron ore and other raw materials for the steel mills.

"Reason for permanent residence in Japan is that I inadvertently (though happily) got married here some 20 years ago and, also, due to the intervening war period. We have a son and a daughter. The son is studying law in a Japanese university. I belong to the M.I.T. Club in Japan and during recent years, we have had visits from Professors Hazen and Dahl both from the Department of Electrical Engineering staff during my Tech days. I shall endeavor to schedule my business trip abroad during 1954 to enable me to attend our 25th reunion."

Jules Leblanc, VI, after many years with the Rural Electrification Bureau of the Province of Quebec, has transferred to the Federal Government of Canada to work on the St. Lawrence Seaway project. Jules is living in the town of Mont-Royal, Montreal. Anthony Standen, X, writes from Long Island, N.Y.: "Right after leaving M.I.T. I returned to England to work for Imperial Chemical Industries (who had sent me to study at M.I.T. on a fellowship). I worked at Billingham, England. I started specializing first in cyanides, then in fumigation with cyanides, then in fumigation of citrus trees with cyanides. This field of specialization had the great advantage that it could not be done in England (owing to the absence of citrus trees), and so I had interesting trips to Spain and Brazil. In 1939 I came back to the United States for permanent residence, and took out citizenship papers. I went to the University of New Hampshire, studied entomology, worked on insecticides, and wrote a book about insects. From 1942 to 1945 I was teaching at St. John's College, Annapolis (Hundred Great Books). From 1946 to present, Assistant Editor of *Encyclopedia of Chemical Technology*. . . ."

Stanford Sword, I, is chief engineer on the Schuylkill River Desilting project for the Pennsylvania Department of Forests and Waters. He is living in Springfield, Pa. Joaquin Llanso, II, tells his own story of an interesting life: "Immediately upon graduation I joined Worthington Corporation and have been with them since. I started in the Experimental Testing Department, and remained there for a year and a half when I transferred to export sales. In August, 1936, I was assigned to Argentina and was resident there until 1942. From 1942 to 1944 I was back at Harrison, N. J., handling special accounts, such as the Royal Dutch Shell organization. In 1944, we went back to South America and remained there until July of 1951, living first in Peru and then again in Argentina for a total of 13 years of overseas residence. During that time I have traveled extensively throughout South America visiting every country save Paraguay. Upon our return from Argentina, after having organized and managed from 1947 to 1951, a sales and manufacturing subsidiary company there for Worthington, we made a month's trip to Switzerland, Italy, France, Spain and Spanish Morocco (Tangier) visiting my family in the last two places particularly. Now I am in charge of Worthington's World-Wide Sales activities, and frequently visit neighboring countries, particularly in the Caribbean area. . . ."

Laurence Newman, I, sends along a bit of Maine philosophy with his short biography – "Was with the Southern New England Telephone Company for 17 years, starting with engineering and outside construction work, methods, and on to division supervisory positions. Before getting to a point where I wouldn't be able to leave, I decided to chuck a white collar job for a life on the salt water. Went into the lobster business with my father, who is now retired. Am enjoying it. . . . The simple life, with a free hand to make decisions and carry them out on my own, fits in with what I want out of life. My travels have been pretty well limited so far to the coast, from Nova Scotia as far as Key West. In another couple of years, when the kids are educated and on their own, we hope to do some traveling." Brig Allen is out of the hospital and well on the road to recovery. As of January 1, he became Detroit district manager for Reliance Electric and Engineering Company. – PAUL F. DONAHUE, *General Secretary*, Conti and Donahue, 239 Commercial Street, Lynn, Mass. FISHER HILLS, *Assistant Secretary*, Dewey and Almy Chemical Company, Cambridge, Mass.

• 1930 •

In June, 1955, our 25-year reunion will be held on the M.I.T. campus, following the pattern originated by '28 in 1953, and being repeated this year by '29. This advice comes from Hijo Marean, who has accepted the chairmanship of the reunion committee, picking up the reins which Hermon Scott had found it necessary to drop because of the press of his many other duties. The Class is extremely grateful for the many hours of effort Scotty has expended in our behalf as chairman and treasurer of previous reunion committees, and more recently as a member of the Institute's committee on reunions. He will continue to be our class representative on the Alumni Council at Tech.

Last month we recorded Hijo as working with American Cyanamid. Your Secretary erred since the firm's name is American Polymer Company. The address is 101 Foster Street, Peabody, Mass., in case any of you have suggestions or questions concerning the reunion and wish to contact him.

R.C.A. has promoted Ken Bucklin to the position of manager of its receiving tube and transitor marketing division. In 1953 Ken received the R.C.A. Victor Award of Merit in recognition of outstanding work which resulted in increased production of the electron tubes used in television. His

home is in Short Hills, N.J. Dr. Edwin Hill, Assistant Technical Director of the biological laboratories at Camp Detrick, Frederick, Md., is now colonel in the Army Reserve Corps. The Hills have three children and have resided in Frederick since 1943. Another doctor, John Larkin of New Britain, Conn., was in the news recently for his work as head of the isotope clinic at that city's general hospital, where isotopes are used in the detection and treatment of malignant body cells.

As the work of the reunion committee gets under way, many interesting news items should be forthcoming for this column. They will be awaited eagerly by your Secretary. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass. *Assistant Secretaries:* ROBERT M. NELSON, 48 East Lawrence Road, Phoenix, Ariz.; ROBERT A. POISSON, 150 East 73d Street, New York 21, N.Y.

• 1932 •

Word reaches us that Sidney Friedman deserted the bachelor ranks in November to marry Madalyn Ruth Wolfson of Springfield, Mass. His bride, who is a teacher in the Chicopee school system, received her B.S. degree from Fitchburg State Teachers College and her master's from Springfield College. Sidney is an engineer with P. J. Kennedy and Company of Holyoke, Mass.

Also hear Howard Kinzer has been made assistant purchasing agent of United Carbon Company. The only other information we have on Howard, not having received a questionnaire from him, is his address: 408 Beech Avenue, Charleston 2, W. Va.

Still a bachelor is Robert K. Mueller, who is associate professor of Aeronautical Engineering and assistant director of Instrumentation Laboratory at M.I.T. He has been associated with the Instrumentation Laboratory since 1942 in development of fire control and other classified instrumentation for the Navy and Air Force. To his credit are publications on airplane stability, prop balance, and microsyn electromagnetic components. Rebuilding tower clocks and foreign automobiles, modifying pipe organs and playing them are his hobbies. Bob lives at 300 Franklin Street, Newton, Mass.

Theodora Keith reports her job as "nothing," but says she is the busiest girl you ever saw in the role of a lady of leisure, taking care of city and country homes, a nearly blind father, and trying to settle two estates. She adds a sympathetic note for the Class Secretary. She edited the class notes from 1943 to 1948; found them fun, but the notes scarce. I know what she means! Why don't some of you send along current information on yourselves. Theodora certainly must have a happy life. Her interests are principally developing a small, old-fashioned New England house in Barnard, Vt., into a miniature paradise, equipped with tiny boat, tiny car, and she hopes in the future, a small horse, maybe a kitten or two, and of course, a teapot (a large one). It makes a nice picture doesn't it? Her many hobbies consist of: writing, sketching, swimming, riding, boating, and skating.

Bob Lawson lives at 619 McCleary Street, Dowagiac, Mich., and suggests that we draw up and circulate names and present addresses of members of the Class of '32. He would like to know the whereabouts of any who live near Dowagiac. Bob is a machining inspector of Kaiser-Frazer Corporation, and also a Unitarian clergyman, having been a minister of Unitarian churches in Reading, Mass., Pittsburgh, Pa., and Dayton, Ohio; assistant minister of First Unitarian Congregational Society of Buffalo and Chaplain, U.S.N.R. He has appeared on major radio stations in Pittsburgh and Dayton and has been a frequent speaker on race relations, civil rights and other similar subjects. He is a member of the United World Federalists; former vice-president and education chairman, N.A.A.C.P., and former member of Group Work Division of the Community Welfare Council of Dayton and the Discussion Club. Bob married Mary Annette Koechel, who went to the University of Michigan, and they have two sons, Richard, 10, and John, three.

In the South we have another clergyman George H. Smith, 116 North Church Street, East Point, Ga., who did graduate work at Columbia Theological Seminary and received his B.D. in 1949. He is minister of the East Point Presbyterian Church. George has been active in civic work, having been mayor and city councilman of Atlantic Beach, Fla., and he is a member of the Lions Club. During the war he was lieutenant commander, Supply Corps, U.S.N.R. He married Helen W. Woodbridge in 1933, and they have a daughter, Susan, aged six. Gardening and photography are his hobbies which occupy much of his free time.

Don Morgan is consulting engineer for R. W. Booker and Associates, St. Louis, Mo. He and his wife, Vivian R. Graves, of Mt. Holyoke College, and their children, Donald Everett, seven, Robert Conant, five, and Patricia Lynn, two and one-half, live at 643 Newport Avenue, Webster Groves, Mo. He has published Navy instruction manuals, planned, consulted on design, and started two large fluid compounding and packaging installations in the St. Louis area on his own. He is active with the "Y" Indian Guides, Engineers Club, St. Louis, and attends as many professional engineering meetings as possible. His recreations are bridge and 16 mm. movies.

Engineering failed to hold Joe Stowell. He did graduate work at College of Physicians and Surgeons, Columbia University, Tufts College Medical School, and University of Pennsylvania Graduate School of Medicine, and is now a self-employed surgeon in Altoona, Pa. Joe has an impressive list of professional accomplishments: Associate in Surgery, Altoona Hospital, Surgeon, Nason Hospital, Roaring Spring, Pa., Surgical Consultant, Cresson Tuberculosis Sanitorium, Cresson, Pa., Attending, V.A. Hospital, Altoona, and Consultant in Surgery, Memorial Hospital of Bedford County, Pa. He married Jane Grimshaw, who went to Wilson College, in 1939. They have twin daughters, Sarah M. and Susan L., 12, two sons, Joseph M., Jr., 11, and Frederick G., six and a small daughter, Cecile C., two. He belongs to the Rotary Club, Masons, and Altoona Chamber of Commerce, and has sailing and travel for hobbies.

Texas has attracted Carl Wahlstrom. He is project engineer for Humble Oil and Refining Company and recently completed the construction of a paraxylene unit in the refinery. Product goes to DuPont for manufacture of Dacron cloth. Unit is designed for minus 150 degrees F. His wife Philomena Perrotta, of Burlington, Vt., is a registered nurse, and they live at 122 Crow Road, Baytown, Texas. With such an address his hobby of deep sea fishing is quite understandable. He is also interested in 3-D stereo photography. — ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich. *Assistant Secretaries:* WILLIAM H. BARKER, 45 Meredith Drive, Cranston, R.I.; ROLF ELIASSEN, Room 1-138, M.I.T., Cambridge 39, Mass.

• 1933 •

First prize this month goes to Wilber B. Huston, with our congratulations, who reports the birth of Thomas Andrew Huston, the fourth boy in the family, on April 18, 1953. Bill also reports moving to 207 Dogwood Drive, Warwick, Va., about a year ago, into a house "better equipped to handle a large family," as Bill puts it. In extending an invitation for a visit, Bill describes his house as two blocks from the James River and only half a mile from the Mariner's Museum. Bill has taken on increased responsibility for aeronautical research with the N.A.C.A. — Our congratulations to Samuel H. Hopper, recently promoted to full professor and acting chairman of the department of Public Health at the Indiana University Medical Center in Indianapolis. Sam modestly reports that his two boys are typical Hoosiers and wild about basketball. Your Assistant Secretary recalls the welcome mat that Sam graciously spread during a development dinner in Indianapolis in the spring of 1950. — James E. Turner reports a change of address to 233 North Main Street in Meadville, Pa., their seventh house in Meadville in 15 years resulting in expert status as a mover. More importantly, Jim was elected a year ago to the Board of Directors of Talon, Inc., where he continues as vice-president and treasurer. Jim qualified as a commuter to Mexico not so long ago when he was settling organizational problems with one of their subsidiaries there. But now hear this! Jim is director and treasurer of the Meadville Chamber of Commerce, director of the Meadville City Hospital, director of the local Cancer Society and, formerly a director of the Rotary Club. This is what happens to able young men in the zipper business, but we are sure that Jim is fully equal to his many assignments.

In the news: Maxwell D. Millard has been named assistant general manager of sales of the steel and wire division of U. S. Steel in Cleveland. Starting as a technical apprentice in a wire rope mill in 1934 at New Haven, Max had been Detroit district manager of sales until his recent promotion. On leave with the Navy from 1942 to 1945, Max achieved the rank of lieutenant commander. Max and his wife Nancy have one son and two daughters. — Reported in the January Review: Lewis R. Smith, M.I.T. '57, son of R. Barlow Smith of our Class; congratulations, and a sad reminder that *tempus fugit*. Breaking all rules of good editing,

your Assistant Secretary acknowledges proudly a son in the sophomore class at the Institute, with another candidate coming up shortly, and two candidates for girls' colleges before the next presidential election, and the fifth member of the tribe cruising through basic second grade arithmetic and the first year, also very basic, of piano lessons.

Breaking into the press: David B. Smith, Vice-president of Research of the Philco Corporation in Philadelphia, spoke on the application of the germanium leaf at a meeting of the Franklin Institute and the Institute of Radio Engineers, reported in *Science News Letter* for December. – Ivan A. Getting, Vice-president for Engineering and Research at the Raytheon Manufacturing Company in Waltham, continues in important service to our country by again being named chairman of the electronics and communications panel of the Air Forces Scientific Advisory Board. – And by no means least, Richard S. Morse continues to expand the activities of his National Research Corporation with an announcement of the start of construction of a new petrochemical laboratory at the Newton site of National's empire, to be in operation before this is printed. – GEORGE HENNING, *General Secretary,* Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, *Assistant Secretary,* Room 24–204 M.I.T., Cambridge, Mass.

• 1937 •

This will be short, of necessity since all the Johns have been most indisposed – my secretary here having been so childish as to get the mumps from our small fry.

Jerry Salny managed to get one more letter from his campaign, this one from Daniel Tower who writes as follows: "Your letter was excellent, but I would surely have done nothing about writing a letter had not your follow-up card arrived. Although I spent only a year at M.I.T. having turned from engineering to history of art, I find that my Tech training is now rather useful in my study of early cotton methods of the 18th Century. After a number of years working in art museums, I am now in the process of making a museum in the Old Slater Mill, at Pawtucket, R.I., the first successful cotton mill in America. It is a fascinating job, but it will be some time before the museum will be open to the public. We live in Providence, with four children, one boy and three girls, ages one to 10, and enjoy our summer vacations on an island in Lake Winnipesaukee, N.H. I hope this fills the bill. You are surely to be congratulated on doing such a good job of getting the fellows to write."

Gil Mott wrote me as follows: "The surprise of hearing your voice the other night has finally shocked me into reporting the '37 reunion which was held in Hartford last spring. Those present were: Ed Hobson, Ruth and Phil Dreissigacker, Bob Morton, Rachel and Albert Shulman, Betty and Cliff Lytle, Lucille and Nick Nickerson, June and Walt Wojtczak, Eleanor and Van Van Dorn and Gil Mott. We had dinner together at the Heublein Hotel, and then moved to the University Club for a social evening which included the showing of movies of the 10-year and 15-year reunions. Everybody had a fine time and agreed that we should do it more often. Wally Wojtczak deserves a vote of thanks for his initiative and efforts in arranging the affair."

Some news items – Dave McLellan was recently appointed plant metallurgist of the Reynolds Metals Company in Phoenix, Ariz. He was transferred to the Phoenix plant from the McCook, Ill., plant of Reynolds earlier this year. James Ewell is now general superintendent of manufacturing for Procter and Gamble Company. He will be in charge of all production functions in P. and G.'s manufacturing department which includes 14 factories in the United States. He joined P. and G. in 1937 at Staten Island, and successively became superintendent of the Cincinnati, Ohio, plant, superintendent of Quincy, Mass., plant, superintendent of central manufacturing division in charge of several factories, and in 1950 was named general production superintendent for all U. S. plants. In 1951 he went on loan to P and G's English subsidiary as director of manufacture. He and Mrs. Ewell live in Cincinnati with their four children.

James Allen Moore has been appointed manager of the Baltimore refinery of the American Sugar Refining Company. Edmond S. Winlund has been appointed chief engineer of Gray Research and Development Company, which concern manufactures electronic and optical equipment for television and radio stations, as well as special devices for the government. Speaking of television, Alfred Schroeder, has produced an improved tricolor tube which is the basis of the color system. His tube, similar in outward appearance to that in an ordinary black and white receiver, has on its internal face 600,000 minute phosphor dots in groups of the three primary colors. Color images are "painted" by three "guns" which emit thin stream of electrons, causing the fluorescent material to flow in patterns dictated by the incoming signals. Mr. Schroeder, described as a practical genius with imagination, when asked how he thought of such a highly complex arrangement said, "I was trying to think of something simple." Wonderful news, isn't it? He is at the David Sarnoff R.C.A. Research Centre at Princeton, N.J.

Earl D. Fraser of San Bernardino, Calif., wrote to The Review as follows: "After six years in Kalamazoo, Mich., as director of planning for the city of Kalamazoo, including about a year's work as planning consultant for other cities in the area, I have just moved to California to be executive director and redevelopment planner for the Redevelopment Agency of the city. The trip across two-thirds of the country was made in a van into which we loaded our possessions, ourselves, and our dog, and went across every way station on the route without even a puncture. Now, does anyone want to trade a good passenger car for a second-hand van?" Arnold P. G. Peterson and Leo L. Beranek, Associate Professor of Electrical Engineering at M.I.T., are coauthors of *Handbook of Noise Measurement.* Colonel Frank Kowalski, Jr., is chief of staff of Camp Pickett. Margaret Hutchinson writes articles, in one of which she said that "whereas, M.I.T. has been turning out at least one woman engineer each year over the past five years, 1953 yields not one." How come? Miss Jean Place Stevenson became the bride of Joe Stearns Clark in October. Hope to see lots more letters pretty soon. – WINTHROP A. JOHNS, *General Secretary,* 34 Mali Drive, North Plainfield, N.J.

• 1938 •

We have a few news releases this month the first of which tells us that Ascher Shapiro has written a book entitled *The Dynamics and Thermodynamics of Compressible Fluid Flow* (New York: The Ronald Press Company, 1953, Vol. I). Volume II will be ready in the spring of 1954.

Warden Hartman has been appointed general credit manager of the Armstrong Cork Company. He joined Armstrong in 1939 as a Building Materials Division sales trainee, and served with the Division's New York and Hartford offices until entering the service in 1941. After serving as major in the U. S. Army Corps of Engineers, he returned in 1945, to become administrative assistant of the Industrial Insulation Department of the Building Materials Division. In 1948 he was appointed manager of Contract Operations Department and held that post until September, 1951, when he became manager of Industrial Insulation Department. Another item announces that Ray Oldfield was appointed manager of plans and product applications of General Electric's Laboratories Department of the Electronics Division in Syracuse. He had been manager of the G-E Advanced Electronics Center at Cornell University.

We have had gratifying response to a post card campaign for news from the Class. Not only have many cards been returned, but also a few responded with letters. The balance of the notes this month consists of excerpts from the replies. Bill Shamban: "There isn't very much to add. I see Jack Downing pretty frequently and occasionally I meet some of the other boys in sunny California."

Howard Lawrence: "There is not much in the way of news about myself for the class notes. I am still with R.C.A. Victor, having completed my 15th year there last summer. My activities are still as manager of the airborne fire control radar engineering group. I understand that you [Don Severance] were laid up from a skiing accident while I was recruiting at M.I.T. last month. I had intended to get over to see you but because there were no scheduled appointments for our second interview day, we left on an early plane. I hope to see you next time." Note: Don says he resents that statement – claims he hasn't skied in nearly two years.

George Skaperdas: Having been only in the Graduate School, I am not sure that I belong to the Class of '38. In addition, there is not much news. I am with M. W. Kellogg, whom I joined on leaving Tech, and doing engineering work in the Research Department. Peer Cody has recently joined Kellogg and I see Jim Warburton'37 now and then." Peer Cody: "I left the position in Huntington,

W.Va., in May and reported to M. W. Kellogg on the first of June. Some of the interviewing time was spent in Boston where I tried to see you [Dave Acker]; however, you were apparently away for about five days or a week. I'm very sorry I missed you. We were not able to sell our house until the time we were in New England which meant a trip back to West Virginia. We are temporarily settled in an apartment here in Plainfield, N.J., and are leisurely scouting for a house in this general vicinity. On vital statistics – we have two boys, Alan six years and Eric three years. It begins to make one feel old when you have one enter school as Alan did this year.

"We spent a very enjoyable day with Fred Ray and family in Glen Rock, N.J., about a month ago, and I had lunch with Paul DesJardins whom I used to see in West Virginia when he was located in Charleston. He's now at Worthington's headquarters in New Jersey." I might add that while Peer was trying unsuccessfully to visit with me in Boston, Marion and I and our youngest child were enjoying a trip through Wisconsin, the Dakotas and points as far west as Rifle, Colo. We were able to make a few visits on the way, but the only one with a classmate was with Dick Bartels and his family.

Roy Hopgood, who has two sons and two daughters, writes: "Am personally very busy with my patent practice. Your [Don's] remark about the spark photographs recalled many pleasant hours with you – I guess we both stuck around the lab that spring of '39." Bert Grosselfinger, who now lives in Manhasset, N.Y., writes from Italy: "This time I'm over here on a vacation – three weeks of motoring through Italy after spending some time in Paris and Switzerland."

Paul DesJardins: "Last spring after having completed the job of helping establish the U. S. Navy Shipbuilding Scheduling Activity as a central scheduling agency for all naval shipbuilding and conversion work, they released the few of us Reserve Officers who had been recalled specifically to help get the outfit organized and operating. I rejoined the Worthington Corporation and, operating out of our main offices in Harrison, N.J., have the task of co-ordinating sales to chemical industry of our general line of equipment. Some time in February, Madelyn, the two boys, and I hope to move into our new house now being built at 12 Surrey Lane, Madison, N.J."

Jack Hum: "Still in California, enjoying the fine weather. Since leaving the Institute in 1951, worked at Oak Ridge for a short while, then went with Bechtel Corporation, and designed steam power plants for a while and participated in the Bechtel-P.G. and E. atomic power study. Decided to go back into metallurgy, so wind up now as the project metallurgist at University of California Radiation Laboratory at Livermore, Calif. With a heavy commuting schedule, most of my spare time is spent in trying to build a hi-fi system. Have seen very few Tech men out here – the only ones so far are W. B. Myers'48 and Calvin Wong'48. Quite busy, still the two boys and girl in the family, trying hard to grow up with them. Have seen no one from the Class of '38 since leaving school. Other than that life goes on its tranquil (?) way."

Walt Johnson: "Just a line to let you know that I am employed as a sales engineer by the J. E. Hammill Company representing York Refrigeration and Air Conditioning contracting. If you haven't heard, Jim Maguire is now located with Monsanto Chemical in Everett." Ralph Lebow: "Since the reunion, we (my family and I) have been transferred to the Parker Aircraft Company, a subsidiary of our Cleveland Parker Appliance Company. We manufacture a complete line of standard aircraft fuel and hydraulic system equipment and are pioneering some very special equipment. As staff engineer – Aircraft Fuel Systems, I travel considerably and visit all aircraft manufacturers. Run into a lot of M.I.T. men but few Class '38. Am sold on the Southern California climate (wasn't hard), and the children are thriving on it. I'm sure it won't be 15 years again until our next meeting."

Joe D'Angelo: "Regarding your request for news, I am still associated with Reichhold Chemicals, Inc., and about a year and a half ago was made plant manager of the Elizabeth Plant, where we manufacture synthetic resins and allied chemicals."

Earle MacLeod: "I started my ninth year with Carrier Corporation December 1. Still chief product engineer of the Icemaker Department. Am active in the A.S.R.E., being on the Icemaker Standards Sub-committee, and being treasurer of the Central New York Section. As a sideline I am developing my own Christmas tree plantation, now two years old, with 76,000 seedling trees already in."

Bernie Lement: "As you know, I am still D.I.C. staff doing research in the Department of Metallurgy. A good part of my work has to do with metallurgical applications of the electron microscope. I find this an interesting and fruitful field of research. A big event in my family life occurred when I became the father of a baby girl. Janet is now eight months old and going through her stages of development at an accelerated clip. . . . I was sorry to miss the class reunion, but it came just after Janet was born and my wife and I could not get away. I expect to make the next one barring similar circumstances."

Howard Milius: "Since November, 1952, have been sales manager for Humphrey-Wilkinson, Inc., Chemical Mfrs., of North Haven, Conn. Have two daughters and a son. My wife, Hope, from Winthrop, Mass., makes more news with her various community activities. Since the reunion visited Lew Hull at his beautiful, renovated, very old farm house. He is undoubtedly the most versatile person I have ever met. He is now learning to play the piano. Add to that gliding, rebuilding, farming and others."

Matt Boissevain: "My family has now grown to two boys and three girls, with the addition of a girl on November 16. All are thriving. The oldest boys are raising a calf to help raise the babies. Still at Electric Boat involved in design of nuclear submarines, together with Harlan Turner and Lloyd Bergeson, Russ W. Brown'42, and many other M.I.T. men." – DAVID E. ACKER, *General Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass.

• 1939 •

Usually at this time in a reunion year, this column would be drumming up a bit of enthusiasm on the whys and wherefores of attending the forthcoming clambake at Harwich Port, Mass., June 12-June 14. Notwithstanding that this June's "classbake" is the most so far as this writer is concerned, one item snitched from the fourth estate temporarily takes precedence, inasmuch as it reveals some timely information on 'mate Dick Cella.

Browsing through the December issue of *Gourmet* for some instructions on how to prepare Guinea Hen Chimay and similar fare, I spied Dick Cella's name in a column headed "Specialties de la Maison" by Tom Marvel. Marvel's column is dedicated to fine eating establishments in New York, and one of those featured in December was Ceila's. The article was so interesting that we are going to quote it almost verbatim so that the Class may be better informed on where to eat in New York. We do this with the hope that we shall be absolved for our ignorance, and that Dick will forgive us for not dropping in for dinner in the past.

From *Gourmet* we quote: "In many ways, the unusual place known as Christ (pronounced Crist) Cella's is more like a men's club than a restaurant. Most of its clientele – 90 per cent male – have been going there for luncheon and dinner for years and are as well known, both to the management and to one another, as if they'd all paid dues to drop in and eat there. Which they probably would do, if this were a requisite for the privilege. Cella's, at 144 East 45th Street, just off Lexington, is the granddaddy of most of the places which have sprung up in the last few years along that part of 45th Street now known as Steak Row. Cella, in fact, may be said to have given Steak Row its start.

"He was quite a man, Christ Cella – both as a host and as a cook. He loved people and people loved him. Moreover, he liked to serve them what they wanted – and that meant steaks, roasts, sea food – food which made up in solid quality what it lacked in fussiness and frills. He hung a modest sign – just 'Christ Cella's' – by the brick steps going down and the crowds came. Christ loved to tell of a couple of nice, nearsighted old ladies who walked in beaming and expectant, under the impression that they were visiting a basement mission.

"Christ sent his boy, Dick, through M.I.T. (with an interval as a fighter pilot), but when the elder Cella died a few years ago, the son, now a graduate aeronautical engineer, renounced his career to come back and run the restaurant.

"It's the same place it was in his dad's day. The bar is crowded and jolly, the rubbed wood tables are clean and warm, the food is tops. There is no menu; the waiters will tell you what's on the fire: calf's liver, steak, roast beef, *filet mignon*, a three-pound lobster shipped down from the icy Bay of Fundy. Such dishes will run from $2 to $6 and everything is à la carte – except, of course, that there's no carte. A dessert specialty is a superb *millefeuille*, made by a French baker who has signed a solemn covenant not to make

it for anyone else in town . . . Closed Sundays."

Those of us who like good food and occasionally get to New York should make it a habit to stop in at Dick's. But I understand from the New York office of my company that Dick is not waiting for business and that usually there is a waiting line. If this is the case, we shall prevail on Dick at the reunion to give us his personal 'phone number so that we can get reservations without the usual headwaiter's ransom.

In the next two issues we hope to have official releases from Reunion Committee Chairman Oz Stewart. But as a gentle reminder to those who missed earlier announcements, the reunion headquarters are at Snow Inn, Harwich Port, Mass., and will be open on or before June 12 through June 14. — *Assistant Secretaries:* GEORGE BEESLEY, 38 Homestead Road, Lynnfield Center, Mass.; MICHAEL V. HERASIMCHUK, Box 495, Bethlehem, Pa.

• 1940 •

These notes are being prepared just as the holiday season has come to an end. It always is a pleasure to write this column, and doubly so at this time because of letters received from numerous classmates. Along with his Christmas greetings our President, Hap Farrell, sent a note that it would soon be time to make preparations for our 15th reunion. In this connection, I am sure that Hap would welcome any suggestions sent to him at his address, Valley View Road, Weston 93, Mass.; or if you prefer to send your ideas to your Secretary, he will be glad to transmit them to Hap.

It is still not too late to contribute to this year's Alumni Fund and enable '40 to be among the top classes in both number of contributors and amount contributed. Our own class treasury stood at $979.21 as of January 1, 1954, and should go over the thousand-dollar mark sometime this year. The latest contributor is our alumni fund representative, John Danforth, who resides at 136 Birch Tree Drive, Westwood, Mass. John's letter reads in part: "Here at long last is my $2.50 for our own class fund. If I waited much longer the five years would be up. I was pleased to see Tom Creamer about a month ago when he was in Boston for the 50th anniversary of his fraternity chapter. Last year I saw Dick Berry, Bob Bittenbender and Phil Stoddard at Alumni Council Meetings at the new Faculty Club — enjoyable occasions."

From Shirley and Arnie Arch comes a card with a picture of their cute two-year-old daughter Adria as the center of attraction. On the reverse side was the following note: "Was separated from active duty on December 14 to accept the position of Director of Air Pollution Control for the city of Niagara Falls the next day. I was in Washington last June and frantically tried to get in touch with you with no success." The theme of Hank and Dorothy Harrison was the picture of their family, three boys and a girl. From Dick Babish, now affiliated with the Class of 1948, comes the following: "Have just adopted a little girl, Joan — a very cute little trick, seven months old. I am back with Cinerama again after a little over three years at Perkin-Elmer working on cameras and infrared spectrometers. Here at Cinerama we have just thrown together, on a few weeks' notice, two caravans of three trucks each mobilizing the field sound and camera crews, in preparation for our next picture *The Thrill of Your Life.* Incidentally, the whole picture *This is Cinerama* was shot with the experimental camera I engineered in 1949 — I got a screen credit, too, if you can read the fine print." Those of you who have seen this picture I am sure will agree with your Secretary in saying Dick can be proud of the end result, and we are sure he will do even better in his next effort.

From Sam Omansky the brief message: "I am still very happily working for the Grand Union Company. Doris and the two children are well, and everything has been going along placidly. There has not been any news of any import here, for which I am thankful." Colonel Stanley W. Connelly, who received his master's degree with us, was recently appointed deputy chief of the Cleveland Ordnance District. Formerly he was head of the Lima Ordnance Depot. Maury Baer writes: "Tried to look you up in Washington when I was down to the Patent Office about a year ago. Now have a boy, two years, eight months, a girl, one year, three months, and a boy, three months. Have moved my business from Cambridge out to Wakefield which makes things much more convenient. We've been manufacturing chemical specialties." Good luck, Maury, in your new location. Despite the above evidence to the contrary, your Secretary is usually very easy to contact, and welcomes visits from classmates whenever they are in the Washington area.

The final letter for this month contains the news that our bachelor ranks again will be decimated. Milt Green conveys the following information: "I'm glad to see that you like your new job; after reading that pitifully short column in the last Review, feel compelled to provide some news. Saw Arnie Arch in Boston a couple of weeks ago, immediately following his discharge from the Army, where he served as C.O. of the Chemical Warfare Plant in Niagara Falls, holding the rank of major. He has now been appointed head of the Air Pollution Control Board of Niagara Falls. But my real reason for writing is to tell you that yours truly has finally given up the struggle to remain single and has just become engaged to Gertrude Kramer of Winthrop, an M.D., currently engaged in doing research work at City Hospital. The wedding will probably take place in April." One final note — your Secretary was admitted to the Bar of the District Court for the District of Columbia just prior to preparing these notes. — ALVIN GUTTAG, *General Secretary,* Cushman, Darby and Cushman, American Security Building, Washington 5, D.C.

• 1941 •

Lew Fykse has taken time out to drop us a line for the column, some of which follows: "As you know, effective October 1 of last year, I left the Standard Tool Company, where I had been vice-president in charge of engineering and began my new duties as vice-president in charge of sales with the Cleveland Hardware and Forging Company. The 'Hardware' manufactures a line of automotive and truck body hardware, and also does job manufacturing of drop forgings and aluminum and zinc die castings. It is an old company, established in 1881, and it has a very live organization and should have a very good future. I have not seen too many Alumni since our reunion. However, Will Mott has visited me twice recently on the occasion of business visits to Cleveland. Also, I had my usual Christmas cards from A. Hoadley Mitchell, Bob Smith, Paul Sanderson, Ed Hayes, and several of the other Phi Delts. All are happy and seem to be doing very well. I keep fairly active in the local Alumni Association of which I am executive vice-president. I am also an educational counselor for the Euclid High School, which takes quite a little work this time of year. We still have only the two children, Karen and Dean. They are respectively 10 and six, and growing like little weeds. . . ." Thanks very much, Lew; it was good to hear from you.

From Helen and Carl Aronsen's Christmas card: "There haven't been any changes worth mentioning." From Dot and Bill Fox: "Nothing real special to report: after more than 12 years with Bethlehem Ship, I have reached the position of section head with at least some very interesting work, and the hope of some future advancement. Our little girl is in second grade, our boy is four, and the third is due in March." We also received a Christmas card from Pat, Bob, Nancy, and Bobby Montana.

After a false alarm on December 30 (what my taxes *could* have been!), Judith Nan Collins finally arrived on January 9. This week end, with both mother and daughter at home, I've been keeping busy taking care of Bruce, aged three, and getting some meals. However, things have gone very smoothly, with the baby usually waking up not too long before feeding time.

Richard Spear has joined the Industrial Relations Department of Kaman Aircraft Corporation, Bloomfield, Conn., as personnel counselor. He was formerly in personnel and industrial engineering work with the Chase Brass and Copper Company of Waterbury, and prior to this, he spent eight years with Pan American Airways, three years with Kensico Tube Company, Mt. Kisco, N.Y., and three years at sea in the Merchant Marine as a deck officer.

I am sorry to report the death of Robert D. Coombs, V, on January 9; no details were given. I sat next to Bob through a good many freshman lectures, and I remember him as an excellent student and a most likable chap. Our sympathies are extended to his family — IVOR W. COLLINS, *General Secretary,* 28 Sherman Road, Greenwood, Mass. JOHAN M. ANDERSEN, *Assistant Secretary,* Saddle Hill Farm, Hopkinton, Mass.

• 1942 •

While most of us are busy either working hard or worrying about income tax time (or both), it is pleasant to hear

about flying to Switzerland for several weeks of Alpine skiing. Jim Klein blew in from Texas the other day and, in the course of describing his new consulting engineering venture, mentioned that he is planning to combine business with pleasure on his European trip. Jim is returning to New England after having spent several interesting and pleasant years working with Tom Slick at the Southwest Research Institute in San Antonio. His work varied from the "lift slab" building construction process to powder metallurgy with additional projects still further afield in infrared spectroscopic analysis and seismic cable.

A note has arrived from Harvard University that Lloyd MacGregor Trefethen, who received his S.M. in Naval Architecture with us, has been appointed assistant professor of mechanical engineering. Congratulations and best wishes from all of us.

Also noteworthy in technical fields were Arthur A. Hauser's paper entitled "Geometric Aspects of Least Squares Smoothing," delivered before the ninth Annual National Electronics Conference last September, and Wally Frank's discussion leadership at the A.A.A.S. Annual Meeting session on "Communication Aids for the Blind." As noted in these columns some months ago, Arthur is with the Sperry Gyroscope Company, and Wally is at the Franklin Institute.

In the family activities department we received a blue-papered message from Jack and Ruth Madwed — "Another candidate for the 10th reunion baby contest — Steven Richard was born April 1, 1953." A card from Dick Haven tells us that he is kept hopping as a sales engineer for Dilts Machine Works. They make, and he promotes, equipment for the paper converting and plastics industries. Dick works at designing as well as selling. He passed the news along that he keeps in touch with Ben Kingsbury. The Kingsburys have moved to Wilmette, Ill., where Ben is a production engineer with one of Chrysler Corporation's suppliers.

The mail this month brought in a warm note from Fred Gander reporting that he, Hazel, and family, are just about all settled in Williamsville. Besides the very nice things he says about this monthly effort, he writes ". . . I'm afraid that I have been quite out of touch with '42 since the fine week end in New London. Not entirely out of touch with Tech, fortunately, since I have been associated with quite a few older Alumni — E. D. Ries'23, and Bob Hershey, also '23, in the Polychemicals Department; (also, Ed Cooper'40, Clem Hamblet'31, and Frank Vaughan'33), and Don Carpenter'22, and Jake Nolen'41 here in Film, plus others that I am sure I have overlooked at the moment. . . ."

An item in the Hartford, Conn., *Courant* about Franklin Hutchinson, now Assistant Professor of Radiation Physics at Yale. Since receiving his Ph.D. in New Haven in 1948, Frank has also been appointed consultant in physics at the Grace-New Haven Community and Hartford Hospitals. He recently gave a talk on "Atomic Energy in Peace: Fact Versus Fallacy." Frank's work covers the use of radioisotopes in cancer treatment and related uses of physics in medicine. A card from S. Edward Yoder in Galveston, Texas, records that he "transferred from Louisville, Ky., after helping to shut down the Louisville Butadiene Plant, a plant of the government-owned synthetic rubber industry. The plant was operated by Carbide and Carbon Chemicals Company. I am now back in Carbides's own plant at Texas City."

The other night Sandy and I were showing some New York friends, real Greenwich Villagers, the sights of Boston, and naturally included the new giant Star Supermarket in Watertown. (That place has more racks and kinds of cookies than most markets have merchandise.) While we were admiring the conveyor package-to-parking lot parcel system, Ed Gartland turned around blushing. It seems that he is chief engineer for the Star Markets, and the conveyors were one of his favorite projects. The mail also brought in a note from Bob Fay, now practicing patent law in his own office in Cleveland.

Long distance move this month was by Bernard and Mary Pat Driscoll. They and their three boys wound up activities in Paris and are now settled in Alexandria, Va. Other noteworthy changes of address are: Seng-Chiu Hu to China Motor Company in New York City; John L. Collins to Corning, N.Y.; Mark and Margie Kravitz to permanent householding in Manchester, Conn.; and your Secretary to Belmont, where the kitchen shop goes into a full basement, a darkroom may someday be a reality, and a whole attic for storing correspondence, photograph collections, magazines and maps. — LOUIS ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

• 1943 •

John X. Foley, Course XVII, received some interesting notice in an article in the Hartford, Conn., *Times*, last November. Under the headline, "New Rinse Strips Paint in Jiffy," the newspaper explains how Jack and his associate, John B. Donahue, developed a new paint remover which does away with the drudgery of stripping off paint from furniture and other objects. Their company, Robert Austin Company of Boston, and branches, operate with huge tanks filled with this magic solution, into which the articles are dipped, and then rinsed with plain water. The remover may also be sprayed on houses and then rinsed off with water, leaving the bare wood, ready for a new paint job. Before this venture, Jack was assistant superintendent of buildings for the First National Bank of Boston.

A card from Barrett B. Russell, 3d, advises us that he was transferred from Chicago to Wilmington, Del., to become assistant to the Sales Manager of Petroleum Chemical Sales, mainly concerned with the sale of Tetraethyl lead. His new address is 220 Florence Avenue, McDaniel Crest, Wilmington. Also on the move, and this is a big one, is our class vice-president, Chris Matthew of Arthur D. Little, Inc., of Cambridge Mass. Chris will take charge of a new western office for his company, to be located in San Francisco, which office will be opened early this year. He has been with Arthur D. Little since graduation, and has been active in many projects involving both scientific and technical-economic studies. The Matthews, with their three daughters, Joyce, Joan and Barbara, will live in El Cerrito, a suburb of San Francisco.

Stewart G. Fletcher, Chief Metallurgist for the Latrobe Steel Company, Latrobe, Pa., spoke on "Tool Steels" before the Worcester Chapter of the American Society for Metals on December 9, 1953. William Maxwell has been appointed sales engineer for the New England territory by Marlow Pumps, Ridgewood, N.J. Bill has had previous pump experience with both the Blackmer Pump Company and Fairbanks, Morse and Company. His headquarters will be in Natick, Mass.

I received a card from newlyweds Martin and Margaret Winter, who were married on September 5, 1953. She is the former Margaret Tamagno of Framingham, Mass. They are living at 859 Planders Avenue, Uniondale, N.Y. Change of address notices inform us that Commander Spencer Adams is with V.R. Sq. 7, A.P.O., San Francisco, Calif.; Charles Duboc lives on Covington Road, Rochester, N.Y.; Captain Dave Falk is at 4 East 32nd Street in Baltimore, Md.; Ward Haas, 221 El Vedado Lane, Palm Beach, Fla.; William R. Kittredge is with the Southern Cotton Oil Company, 160 East 22nd Street, Bayonne, N.J.; Hung Liang's address is Shadow Lane, New Rochelle, N.Y.; Warren Manger, 854 Edgewood Avenue, New Haven, Conn.; Maurice T. Obregon is at Semana Ltda., Avenida 10, No. 24-91, in Bogotá, Colombia, S.A.; Basil Rabnett, 107 Bidwell Avenue, Toronto, Ontario, Canada; Lawrence R. Stumpf, 3369 Halderman Street, Venice, Calif.; and that's all.

I just today learned that Ray Richards had sent our Class a telegram from Europe, wishing us well at our reunion last June, but that the telegram arrived at the Hotel Mayflower a day late. Thanks, Ray, we acknowledge receipt herein. Wally Rowe, Class of '49, advised me that an invitation has been extended to our hockey-playing classmates, Bill Verrochi, Fred Kaneb and Bob Mason, to attend and play in an alumni versus undergrad game to be held on February 20.

I received a letter from Stan Paterson with regard to a memorial fund in memory of his recently deceased fraternity brother, Irving Shaknov, whose passing was mentioned in these notes. The Theta Xi Fraternity at the Institute has established the fund to contribute books for their fraternity library and for other worthy purposes. For more information about the fund, write to Stan Paterson, 240 Nahant Road, Nahant, Mass.

As you may have noticed in the beginning of these notes, a great deal of my information came from the clipping service. In return for this, I have been clipping any articles I find naming M.I.T. men, regardless of class affiliation, and mailing them to The Review. This helps the other Class Secretaries. You may join in this little amusing hobby, if you'd like

to, and mail in material you read in the papers. I wouldn't include articles about traffic violators and such, but almost anything else will do, as long as it has an M.I.T. tag attached. – RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn.

• 2–44 and 10–44 •

Jim Mulholland, who might normally have authored this combined journalistic venture for the Classes of 2–44 and 10–44, has his hands full at present with his own new business venture in the field of technical publications. Consequently, you are being exposed to the doubtful talents of a rusty amateur. Fortunately, an invaluable aid to writing a column at this time, and for the next few months, is the ready-made, predominant theme – 10th reunion in Lenox. You have already received a first announcement concerning the facilities and program for the week end of June 11 to June 13, at the Curtis Hotel, Lenox, Mass. A nine-man committee is well along with the plans, and we've had an initial response which means a really successful affair.

Perhaps what we need most of all is some grass roots activity on the part of those of you who have already indicated that you'll be there, to build up the attendance even further. Why not arrange to see, or call, a classmate and get him and his wife to come along with you? Our intelligence agents report that virtual motorcades are being organized in some areas. Why not yours? To add a personal bit of information, I can assure you that the Committee has made a wise selection as to location and facilities. Since my wife spent last summer on the staff at Tanglewood in Lenox, regularly from June through August, we think the location is just right for a reunion week end. An added advantage is the fact that substantially it cuts the traveling time from New York City and other areas outside New England. You can drive up from the city in less time than it takes to come over from Boston. Next month in this space we shall present a preliminary list of those who are planning to be at the reunion. I hope that your name can be listed.

One major effort which your Committee is making to generate individual interest in the week end is the Class Dinner on January 27, being held at the M.I.T. Faculty Club. Scotty Carpenter has prevailed on Johnny Hull, world-traveler and 10–44 Class President, to make the globe-girdling trip from Ivyland, Pa., to give us an up-to-date report on his movements. (Your Acting Secretary will be there armed with pencil and reporter's notebook, and next month we shall present an account of John's remarks, plus late news on the many others we hope to see present.)

Personal news this month, however, is limited to my own infrequent contacts with a few 10–44 classmates. I can report that George and Clara Quisenberry are now living in Port Washington, N.Y., and that George has recently become assistant sales manager for Morningstar, Nicol, Inc., and Paisley Products, Inc., nationwide manufacturers of industrial adhesives with headquarters in New York City. Cort Ames writes from San Francisco, where he and Dorie have been located for almost six years, that his new position as assistant to the president of Dole Engineering Company has turned out to be extremely interesting. The company is new and small, but hopefully growing in the field of advanced design food-canning equipment. Cort says that overseas accounts are in the process of development, and he mentions that his work may allow him and Dorie to do some European traveling soon. (The two boys to stay at home?)

On the subject of traveling, Minette and I spent the summer of 1952 wandering around Europe on a budget. (We'll be glad to pass along for free our advice as to how to do this on $9.04 per day for two, only transportation excluded.) Prior to that we had been in Washington since the previous September, where I held a rather dull and disillusioning position as economist with the Wage Stabilization Board. Quite a difference from the more than full-time job I now have, running what sometimes seems to be a three-ring circus, as industrial relations manager for the Forbes Lithograph Manufacturing Company in Chelsea, Mass. (Forbes is one of the largest commercial printing companies in the country.)

In the Harvard Square neighborhood that we now inhabit, I have re-established contact with Ray Wilding-White, my old literary compatriot from *Voo Doo*. Ray switched his professional field after the war and studied music composition at the Juilliard School of Music in New York, and at the New England Conservatory of Music here in Boston, receiving his degree from the latter school. Since 1951 he has been a producer for FM station WGBH, Boston, which is perhaps the nation's outstanding educational radio station, supported by, among others, the major Boston colleges and universities. WGBH will also start an educational TV station here next October, and Ray expects to be in on the fun. Concurrently with his radio work, Ray has made substantial progress as a young composer of orchestral and choral works, having held a scholarship for several summers from the Berkshire Music Center at Tanglewood. He has had one of his works performed by the Boston Symphony Orchestra, and others by outstanding choral groups locally. Music composition is a really tough field for the newcomer, and we are glad to see that Ray has the talent to make such progress. – KENNETH G. SCHEID, *Acting Secretary*, 45 Linnaean Street, Cambridge 38, Mass.

• 1945 •

We wish other seasons of the year besides the Christmas season would move you to forward news and gossip to your Secretary. This month we have plenty of facts to publish, but what am I to do the remaining months of the year unless you guys and gals get the urge to write, as we hope you shall?

On November 14 Chuck Patterson took the fatal plunge. As we write these notes we are admiring the bridal picture of Mrs. Charles A. Patterson, Jr., nee Janet Norton Smith. The wedding took place in Forside Community Church, Portland, Maine. After a honeymoon in Sea Island, Ga., the newlyweds settled down in the peaceful Hub (Boston, to those of you who may have forgotten). Chuck is still on active duty as a lieutenant U.S.N.R., passing the time of day at Bethlehem's Fore River Yards in Quincy. We trust Charlie will return to Spenser Thermostat after his release which should be soon. The Saturday before the Patterson wedding, Don Whitehead and Joan Francis Curtis both of Worcester were married at an afternoon ceremony in the First Unitarian Church of Worcester, Mass. Since their return from a Bermuda honeymoon, the bride and groom have been living at 14 Brainridge Road, Worcester. Don, as many of you will recall, was a member of both Tau Beta Pi and Sigma Xi. Don is associated with his father at E. Whitehead, Inc., and has been quite active in alumni affairs in his area. He is presently vice-president of the M.I.T. Club of Central Massachusetts.

Ed Zych and Shirley Jean Keefe were married in Chicopee Falls, Mass., on Monday, October 12. Ed was with us at the Institute freshman year before matriculating further with the U.S. Army. He is presently chief radio announcer for WACE in central Massachusetts and is known professionally as Ed Carter. In late December Mrs. Jeptha H. Wade, nee Emily Vanderbilt, was matron of honor at the marriage of her sister Ellen French Vanderbilt to Andre Newburg in Williamstown, Mass. Jeptha and Patty are living in Bedford, Mass.

The Christmas cards this past year brought forth news from many. Buzz Busby reported the birth of a second boy, George Darracott, born last March 23. Yes, George was named after fellow classmate George B. Hetrick, Jr., who is with Armstrong Cork Company in Detroit –sales engineering we believe. Back to Busby, Buzz recently bought a new home in Okmulgee, Okla., to accommodate the recent addition. Oklahoma must be permanent for our old friend from Mississippi, for Buzz is the geologist with William H. Pine – an independent Oklahoma oil operator. Several months ago we reported George Bickford's change of address from Grafton, Mass., to Fayetteville, N.Y. George, or should we say Curly, is with Carrier Corporation as a staff assistant to the manufacturing manager. Bick's work also involves engineering economy studies, which is a field George became interested in when he was with Whitin Machine Company. George was troubled with the thought of Navy recall, but we trust this is a subject none of us need worry about. Jerry and Nancy MacKinnon's Christmas card bore a Canobie Lake, N.H., postmark which has aroused our curiosity. We doubt if Jerry is a professional freshwater fisherman, but we do wonder where he is putting in his time.

Nick and Rosemary Mumford with their four children still reside in Grand Prairie, where Nick exercises his engineering know-how for Chance Vought Aircraft Corporation, while his old roommate Pete Hickey is a top grade leatherman with John R. Evans Company. Yes, both the man and the leather are top grade! Pete spends most of his working

hours in Boston's leather district, but his off-hours are spent in Garland Road in Concord, Mass. We saw Pete briefly Thanksgiving time, and we can report that Pete, Lou, Lisa and twins, Bill and Pete, are all fine. Erroneously we reported in the January Review that other V-12 roommate Tom Stephenson was Alcoa's general construction superintendent. What we should have said was that Steve is an equipment installation engineer working for the general construction superintendent. Our apologies, Steve.

Cards were received from Bill Shuman, Dick Jorgenson of Cleveland, J. J. Strnad, Prexy Chick Street and Jerry Patterson among others, but we have no special comments to offer about them other than that they are all alive and kicking. —Assistant Secretary Bill McKay promised some news for a later issue of The Review, while Assistant Secretary Ed and Elinor Stoltz report the birth of a daughter Suzanne on November 23. As for us, Fran and I spent a most enjoyable holiday season highlighted by a New Year's Eve party at Bill and Pat Grant's. Little Willie'48, as many of you will recall, was cox of a most successful crew our senior year. Tech families in attendance were Joan and Abie Porson, 10–44, my ex-roommate and perennial commuting partner, Bob MacDonald, once of '45 but now of '48, Pete St. Germain, Dolores and Big John Rudolf'48 of Minneapolis, and Bob Webber'50 and his wife.

Recent changes of addresses would indicate that Reg Stoops'48 is still with American Cyanamid in Stamford, Conn., while Leon Schindel is probably at the Institute, although he lives in Concord, Mass. Hal Rover moves about New Jersey, while Bill Pockman of DuPont the last I knew, is now located in Decatur, Ala. It is safe to say that Bob Maglathlin is a proper Bostonian; we continually receive changes of addresses from him but it is always North Shore to South Shore, or vice versa. John McMullen, a Course XIII-A student, has left the Navy to enjoy private enterprise in Hoboken, N.J. Charlie Goldie stays in Cambridge, while Bob Landwehr gets into the "Go West Young Man" act by moving from Toledo, Ohio, to Berkeley, Calif. Dick Bradford who received his M.D. at the University of Cincinnati has moved back to "Cinci" from Chicago. George Mckewen, Jr., who was with Locke, Inc., a General Electric subsidiary in Baltimore, has moved to Chicago where Jack Sherman, among others, is located.

Should any of you desire up-to-date addresses of fellow classmates, drop me a line and we will be pleased to forward them to you. Of course, we could tell you that you could receive them from the Alumni Office at the Institute, but in doing so you would not have to write us a few lines of transmittal which we would turn into a Review news item. Cheerio! —CLINTON H. SPRINGER, *Secretary*, Firemen's Mutual Insurance Company, Room 2140, Graybar Building, 540 Lexington Avenue, New York 17, N.Y.

• 1949 •

Those red letter days, June 12 and June 13, are rapidly approaching. Got the date marked? Big doings are planned for all '49 mates. Rumbles from our reunion committee include clambakes, Cape Cod, golf, deep sea fishing — sounds too good to miss. You will receive all the particulars straight from Archie Harris and the other reunion lads. Archie plans to edit a newsletter featuring the high lights of the reunion. It will also carry current news of *all* our class members — the many who attend and the few that cannot make it. To support the cost of the venture, Archie believes he can squeeze by at two bucks a head, so break free two singles and send them to Archie. It will be worth the laughs and memories. Now for some news.

The Class extends its deep sympathy to the family of William W. Tewell, Jr., who was killed in an automobile accident on December 24. We were also sorry to learn of the death of Francis B .Maxwell on November 21.

Births: To Mr. and Mrs. Robert K. Breese, a daughter, Tina Suzanne, on June 14; to Mr. and Mrs. John W. Carr, 3d, a daughter, Catherine Creswell, on January 25, 1953; to Mr. and Mrs. Harold Green, a son, David Harold, on February 1, 1953; to Mr. and Mrs. George Piness, Jr., a son, Peter George on October 6.

Engagements: Edmund A. Bolton to Ruth E. Lebourveau of Somerville, N.J.; Nelson W. Marrotte to Louise Houghton of Blakely, Pa.; Thomas H. Martzloff to Nancie Stewart of Scarsdale, N.Y. Tom is in the San Francisco office of McKinsey and Company, management consultants.

Weddings: Bredo H. Behrens to Joyce E. Brown, August 15, in Oslo, Norway; Bredo is employed by Nissen and Von Krogh, consulting engineers of Oslo. — David E. Breed to Elizabeth J. Collins, April 4, in Hartford, Conn. Dave is with the research department of Pratt and Whitney Aircraft. — Marshall E. Burbank to Fay S. Hinman, July 4, in Lanesboro, Mass. Marshall is an engineer in G.E.'s naval ordnance department. — Robert E. Doheny to Helen W. Bryan, October 24, in Summit, N.J. Bob is associated with the Grinnell Company in Providence, R.I. — Lee C. Eddison to Grace B. Gere, January 17, 1953, in Meadowbrook, Pa. — Henry J. Fitzpatrick, Jr. to Loretto M. Kelly, January 24, 1953, in Niagara Falls N.Y. He is a field engineer for the Cambridge Corporation of Boulder, Colo. — David K. Hardin to Diane Davies, September 5, in Chicago, Ill. Dave was recently made a director of Market Facts, Inc., of Chicago. — Thomas D. Higgins to Rose Ann Smith, October 3, in Charleston, Mass. Tom is an electrical engineer at Carbide and Chemical Company. — Warren Houghton to Patricia M. Mulally in Salem, Mass. He is an engineer at G.E. — William P. Hurlbut to Helen O. Sims, July 25, in West Leyden, Mass. Bill is working for his Ph.D. in biophysics at Johns Hopkins. — Warren Joy to Shirley Patterson, November 10, 1951, in Amesbury, Mass. He is designing jet engines for G.E. in Cincinnati. — George P. Loomis, Jr., to Kathryn Mayo, April 25, in Dobbs Ferry, N.Y. George has joined the sales application engineering staff of Reliance Electric and Engineering Company in Cleveland. — Robert F. Mahar to Eileen A. Curran, August 22, in Holyoke, Mass. Bob is an engineer for D. J. O'Connell Sons. Robert L. Nesbitt to Carolyn Klain, December 31, 1952. — Jan B. Peyrot to Carolyn Coleman, October 10, in Newton Highlands, Mass. — Thomas W. Pickett to Joan L. Meade, July 11, in North Quincy, Mass. Tom is a research engineer for the Sanborn Company in Cambridge. — Francis Pooler, Jr., to Barbara R. Giles, December 27, 1952, in South Sudbury, Mass. He is a meteorologist for the U.S. Weather Bureau in Washington. — Bernard J. Ruskin to Lydia P. Rosenfelt, January 4, 1953, in Chestnut Hill, Mass. — Horace A. Sawyer, Jr., to Sarah J. Danner September 12, in Duxbury, Mass. He is at M.I.T. with the Division of Industrial Cooperation. — William H. Wilson to Elizabeth M. Canby, October 10, in Hartford, Conn. Bill is an engineer at Pratt and Whitney. — Alexander Vanderburgh, Jr., to Edith C. Williams, December 27, 1952, in Brewster, Conn.

Marvin Becker has been transferred by Monsanto from Springfield, Mass., to their newly established polyethylene production organization at Texas City, Texas. Frank J. Pareti of Milan was guest speaker at the monthly meeting of the Historical Society of Massachusetts and spoke on "Italy in Recent History." Peter Cambourelis is presently a sales engineer for Rem-Cru Titanium, Inc., of Midland, Pa. George F. Tomlinson was appointed senior assistant planner of the Regional Planning Commission and is located in Cleveland. Ensign Paul Reynolds, having completed the Civil Engineer Corps officers school at Port Hueneme, was appointed officer in charge of construction at the Sixth Naval District, Miami. Paul headed his own construction company prior to going into the service. John Kayman'48 has been appointed a field engineer of the Lamson Corporation, and Walter Chaiko'48 is now supervisor of quality control for Johnson and Hoffman Manufacturing Company.

Bertram Collins is with the Massachusetts Unemployment Division of Associated Industries. Wilbert Chope, President of Industrial Nucleonics Corporation, was selected "Outstanding Young Man of the Year" by the Columbus, Ohio, Junior Chamber of Commerce. The award was a result of his work in the industrial application of nuclear physics. Fred Kochendorfer and Taylor Craig are with the Lewis Flight Propulsion Laboratory, Cleveland, and are in the Supersonic Propulsion Division and Engine Research Division, respectively.

Richard A. Allen is senior test engineer with the Hamilton Standard Division of United Aircraft Corporation, and is located at Windsor Locks, Conn. Edward S. Rogers and his wife are spending a year with the Mistassini Indians who live in the Hudson Bay area of Labrador. Their expedition is under the auspices of the Arctic Institute of North America, a joint U.S.–Canadian foundation. Walter J. Freeman, in his third year at the Yale Medical School, was awarded the Perkins Prize for the best scholastic record in the basic subjects of medical and biological sciences. — CHARLES W. HOLZWARTH, *Secretary*, 1426 Grace Avenue, San Jose 25, Calif.

• 1950 •

The news keeps coming in at a fairly good pace via news clippings, letters, telephone conversations, and carrier pigeon. For those of you who still haven't found time to tell us your hot news, kindly release your pigeons and let them fly here with your news scoops.

Les Allison writes as follows: "I left the Industrial Liaison Office at M.I.T., and joined Jack Jacoby here in Olin Industries, Inc. Jack has, of course, been here one and a half years; I arrived in November. The job is with the Department of Product Commercialization in the general research organization of Olin, a jaw-breaker which means market surveys, plant site work, financial analysis, and so on. I am quite happy with the decision to join Olin and, of course, we visit Boston quite often. Peggy and I live here in New Haven, where we are comfortable on the top floor of a two-family duplex." Les also sends word of classmates: "John J. Paull still with Philadelphia Electric Company, Norristown, Pa.; son, Stephen, born May '53. Norton Belknap still with Esso, Bayway, N.J.; he and Mary live in Roselle. Ross R. Quincy also at Esso following his term at Practice School and a Fulbright to Europe. He may still be at Everett refinery. Joe Gottleib left Procter and Gamble to return to a New York construction company. A baby born in November. William Dave Mohr finished two years in Chemical Corps and signed with DuPont's Experimental Station, Wilmington, Del. Jim Staikos still with Monsanto, Everett, plant, with the draft board yapping at his heels."

James Gay writes: "I'm now out of the Army after serving two and a half years in this country and in Germany. Now working for Jackson and Moreland in Boston. My wife Jean and I are proud parents of two children— Barbara, aged one and a half years, and James, Jr., born in November." Ed Friedman writes from New Britain, Conn., that he now has a son, Charles, born in the Meriden Hospital on September 29, 1953. Jim Bennett is out Detroit way and says that he and his wife, the former Betty Ann Fleming of Detroit, are proud parents of a daughter, Carol Ann, born in August. Jim is employed with Thompson Products Company, of Detroit, as an industrial engineer.

Frank Ferrigno has left the employ of Uncle Sam and joined Sperry Gyroscope Company in Great Neck, N.Y., where he is an assistant project engineer. Barney Byrne is working for Monsanto in St. Louis. Gene Comeau is working for Sunco, El Dorado, Ark. Jack Acton is with General Electric Company in Schenectady. John Anson is at the Los Angeles Tumor Institute in Los Angeles. Don Eberly is at the Molusi College, Ijebu, Igbo, Nigeria, Africa. Don't try to pronounce it too fast or you'll tie your tongue in knots. Benjamin Eisenstadt is working at the Lincoln Laboratories at M.I.T. Sigmund Holmgren is still in Alaska with the Department of Health. Warren Marcus is back in a civilian capacity again.

Iain Finnie has joined the staff of the Mechanical and Electrical Engineering Department at Shell Development Company's Emeryville research center. Robert Clement has received his Ph.D. from the University of California in Los Angeles. For the coming year he will be at the University of Wisconsin as a project associate in research dealing with synthetic organic chemistry in the steroid field. Bill Nichols has registered as a graduate student at Cal Tech where he will major in chemical engineering. Bill was with Hercules in Wilmington, Del., before he headed out to California. Jack Drysdale is with DuPont at their Experimental Station in Wilmington.

Hank Boyles was seriously ill this past summer but has staged a wonderful comeback and is almost back to normal. Hank's son, Glenn, is now in the second grade and getting along famously. Hank and Peggy also have a two-year-old daughter, Nancy. Lieutenant John Boyden and Naomi Jane Dixon of Kansas City, Kansas, said "I do" recently at a colorful ceremony in the Post Chapel, Wright-Patterson Air Force Base, Dayton, Ohio. Jim Baker writes that he is now working for Visking Corporation (a plastics firm) at Terre Haute, Ind. He and Gay are proud parents of a baby boy, Stephen. Pete Baker is with Arthur D. Little, Inc., Cambridge. Joe Grano is with Monsanto Chemical at Indian Orchard, and Harrison White is on the staff at M.I.T.

Now a little about J.P. before we sign off. I'm no longer at the new M.I.T. auditorium. I finished up the main field engineering and received a promotion in the fact that the paycheck is now fatter, and a demotion in that I went from university-type buildings to junior-high-school type buildings. I'm an assistant superintendent for the Park Construction Company and am working on a new junior high school building for the town of Marblehead, Mass. It's a modern-type structure that rambles all over the countryside. — JOHN T. WEAVER, *Secretary*, 18 Buena Vista Park, Cambridge 40, Mass.

• 1951 •

Your Secretary wishes to extend thanks to all those warm-hearted classmates who took time out from a busy routine to send Christmas greetings and include a bit of news.

Warren Foster sent in a statistical activity report on some of the XV men who held an informal get-together recently in Dorchester. He says: "Walter Casey married the former Barbara Sutton of Dorchester shortly after graduation, and they are now parents of two daughters. They are presently living in Cleveland where Walt is employed as assistant to the vice-president of engineering at the Harrio-Seybold Company. Bill Callahan married the former Millie Jarvis of Buzzards Bay, Mass., and they, together with Bill J., their three-month-old son, are also residing in Cleveland. Bill is working as assistant to the technical and research director of the Steel Founder's Society. Incidentally, the Caseys and the Callahans live across the street from each other in Cleveland.

"Fred Bumpus who has recently completed his tour of duty with the Army was also present with his new wife, the former Mona Carson of Brockton. Living on Marlborough Street, Boston, Fred is working as an engineer for the Boston Manufacturers Mutual Fire Insurance Company. John Conley, still a bachelor, is working as a market analyst for the American Brake Shoe Company. He is living in Manhattan, and is attending Columbia." Warren married the former Elinor McNeice of North Quincy. They are proud parents of a 15-month-old daughter, Sherrill Ann. Warren is employed as a scheduling engineer for the Raytheon Manufacturing Company in Quincy.

Glenn Mackey writes: "This Christmas finds me in Merrie England at Manston where I currently am engaged in pushing Sabrejets around the English areas. Most of the spare time finds me in London, 80 miles away (via my Austin) west of here. With few exceptions, the general life is pretty good here— and I'm still retaining my bachelor status." (Glenn, you might contact Art Wasserman at Oxford for more details of '51 men in Europe.)

Bill Hoffman became engaged to Theodora Kreiger of New York. Bill is currently at Little Creek, Va., with the U.S. Navy. Doug Kaufman and Ruth Kendall said "I do" in Newton in December. Dick Howe is presently employed by the California Company as a development geologist after a leave of absence to spend 19 months with the A.S.A. at Fort Devens. Jose Otmo left his former position of instructor of civil engineering in the College of Agriculture and Mechanical Arts of the University of Puerto Rico to take the job of senior bridge designer with the state highway department of Georgia. Jose reports that he and his wife became proud parents of a baby girl in August. Ed Ostroff was one of three men recognized by the Air Force for their assistance in developing the electronic computer circuits for the "Volscan." This device picks up planes 60 miles from the control shack and directs them until they are two miles from the runway. The equipment in the aircraft, receiving its electronic order from the "brain" on the ground, can control the plane until it is within sight of the airstrip. As a result, even if the pilot cannot see the ground, the Volscan and other electronic landing aids will help bring the plane all the way in.

First Lieutenant Bob Borg recently received the Bronze Star Medal for meritorious service with the 25th Infantry Division in Korea. Bob, as communications officer of the division's 35th Infantry Regiment, was cited for his action from March 10 to August 27 as a platoon leader in the regiment. Part of the citation states: "Repeatedly exposing himself to enemy fire, Lieutenant Borg went on many patrols beyond the main lines to observe difficulties encountered by the communications personnel.'" Bill Griffen received his sergeant's stripes while serving as intelligence chief with the "Flying Boxcar" transport squadron of the First Marine Aircraft Wing in Japan. Congratulations, Bill.

Bob Perry has joined the staff of the process engineering department at Shell

Development Company's Emeryville research center as an engineer. Chuck MacDonald is now working at the home office in Charlotte, N.C., of the J .A. Jones Construction Company.

Howie Livingston writes: "I'm still in Iowa doing metallurgical research for the Atomic Energy Commission at Iowa State College. Norm Peterson is doing graduate work here. John Birmingham was here but has left for Harvard. Surprisingly enough, I met Fred and Betty Lehmann, Dick Reuther, and Dan Sully last April in the middle of the Pennsylvania Turnpike. Yes, I'm still single and for the present, also a civilian." Dan Sullivan reports that he is now a corporal in the Army at the Aberdeen Proving Grounds. Dex Whittinghill, after completing one year of management training with the Campbell Soup Company in Camden, N.J., was assigned to the Methods Engineering Department as an analyst. Marv Grossman is finishing up his work at the "B" School at ye olde Harvard. Marv reports that Marty Miller has started his first year at the "B" School. Lew Schaeffer reports that he is now working with the Sun Oil Company in Texas – plenty of room (elbow, that is) out there, isn't there, Lew? And here, all the while, I thought Lew was anxious for an oil job in Saudi Arabia. Lew tells us that Dick Lock and Bob Bensen are both proud papas. Avrom Handleman is now stationed at New York City with the 1st Army Medical Laboratories. Jim Banister and Dan Sully are both residents of Palo Alto, Calif. Dan is working for the Sierra Electronics Corporation. He's also the proud father of two children. Dan sends sympathetic greetings to all the Easterners concerned with problems of snow and anti-freeze solutions. Al Parr is working for the General Precision Lab at Pleasantville, N.Y.

Your Secretary was surprised while eating lunch when he saw Bob Pfaff. Bob, now with the Air Force, was making a visit to I.B.M. in connection with a joint research project. How about dropping a few more news items in this direction, fellows and gals of '51? – STANLEY J. MARCEWICZ, *Secretary*, Route 2, Highland, N.Y.

• 1952 •

Just today I received from the ever-faithful Alumni Office a brochure entitled *M.I.T. Alumni Make News* and was pleasantly surprised to find so many "wheels" among our fellow Alumni. It was distressing to note that more than a year has passed, and there are still no '52 men on the list. But there is plenty of time ahead in which to make our mark on the world. And now for the news.

Hitchings: Muriel Steele of Somerville, Mass., became the blushing bride of Peter Stephan on November 14 in ye olde Cambridge, Mass. The newlyweds are presently living in Dayton, Ohio. Little Don West was married in Duxbury, Mass., on October 17. The gal's name, oh yes – Marcia Berghaus. Don and Marcia are making their home in Seattle, Wash. On October 10 Marge deMille and Hal Wardle were married in Milford, N.J. Hal is a khaki-type lieutenant; he and his bride are now living in Washington, D.C. Another Marge, this one named DeLeo, was married on or about November 8, in Cambridge, Mass., to Cliff Moon. The word is that Cliff is now stationed in Toledo, Ohio, with the Army Ordnance Corps; the Moons are now in Toledo.

Dippings from the mailbag: Lou DiBona, the newlywed (almost), writes: "Been meaning to write sooner, but I have been pretty busy getting married and being transferred from one location to another. I am now permanently in the Pittsburgh Office still working for the Air Conditioning Division of Westinghouse."

Dick Lyle, the chemist's chemist, writes: "First and foremost, last August 22 I married Dorothy Ellen Smiley of Omaha, Neb. Lloyd Currie, now a graduate student in physical chemistry at the University of Chicago, was an usher. I'm here (University of Illinois) in the Department of Chemistry on a fellowship working toward a Ph.D. degree in organic chemistry – hope to get it around June, 1955 – if the Chemical Corps smiles benignly on me. There are quite a few Tech guys out here. Harry Johnson'51, Gust Hendrickson'51, and Bob Stolow'53 are graduate students in chemistry. Dave Link'52 is in physics. Oh, yes – Emil Volcheck'52 was a coauthor of a paper appearing in the November 20, 1953, issue of *Journal of the American Chemical Society*." And a happy triphenylcarbinol to you, Dick.

And a letter from Bill Morton: "The Air Force gave me the choice of an indefinite tour of active duty or discharge, so I became a civilian again on September 3 – call me Mister! I didn't return to DuPont, but took a position as a test engineer with General Electric. We move every three months, keeping us on our toes."

Ed Margulies writes: "I thought I would report to you that I think that I am still alive. The second year of my formal medical education is fleeting by, and every day I find it more exciting than the last. . . . Art Turner is still in Washington working on the same project. Taj Hanna has been transferred to the Research and Development Command at Wright-Patterson A.F.B. Paul Seever is at Camp Gordon, Ga. He is a sort of principal of a school in which his noncoms teach instrument maintenance and repair for the Signal Corps. In his last letter he mentioned that Don Tarinelli was called into the Corps of Engineers at Fort Belvoir. Dick Quigley and Jane MacGregor, Wellesley'55, are now engaged and will be married as soon as possible. Dick is still working for the Aero Department at Tech. Bill Conkright is with a fire-fighting unit somewhere in Europe. Mary Lou Kilcup wrote that Dick was sent to Japan rather suddenly. Also, Marcelle Davidson wrote saying that she and Joe had established a home in Ann Arbor. Joe is working for Henry Ford. Ben Shaver says hello from Yale."

From Merwin Blum: "A slight correction about my attending college in Denver. I was to attend technical school at Lowry A.F.B., and my wife was to attend the University of Denver. However, I was discharged after 96 days in the service because the Air Force had too many officers on an indefinite status. I am now an assistant process supervisor with Technicolor Motion Picture Corporation (Los Angeles). My wife will attend Pepperdine College in L.A." From the U.S. Naval Ship *General R. M. Blatchford* (T-AP153): "Enjoying a delightful cruise on this luxury liner – spacious staterooms, exquisite cuisine, and so on. This converted oil tanker isn't *too* bad, though. We dock in Bremerhaven tomorrow. Then I find out where I'm going to be on this continent. Al Kandel."

And from a guy already there, Mike Sapuppo: "Wie geht's? Here I am in Deutschland! Yet – Uncle Sam sent me over in August of this year . . . . Have a pretty good deal here. Working with the Headquarters, 51st Ordnance Group, doing fifth echelon work for the 7th Army and NATO countries . . . . I expect to join the ranks of the married when I get home in September '54. I saw Al Hofstatter a couple of months ago on his way down to one of our depots. He's just a few miles from Garmisch and Berchtesgaden, and he has his Olds '88 with him – so take it from there! If you hear from Joe Alibrandi, I'd appreciate it if you would send me his address. Danke." How about it, Joe, for a poor little doughboy in Germany.

From Korea is a word from A-squared Kramer: "As you can see from the address on the envelope, I'm with a Graves Registration outfit. Don't laugh – because I'm not a mortuary officer. My job is motor officer. Our company has quite a few more vehicles than the average company. Of course, I've got my own souped-up jeep. We are participating in a phase of the Panmunjon parley known as 'Operation Glory.' Under this plan we are to go into North Korea up as far as the Yalu River (Manchurian border), in order to recover bodies of U.N. soldiers hastily buried in temporary cemeteries during our retrograde actions of 1950 and 1951. Of course, no weapons or cameras are allowed, and we go up under close Communist scrutiny. We've already been up into the other side of the demilitarized zone several times. Oh, yes, our company headquarters is about 14 miles north of the 38th parallel and only four miles away from the main line of resistance. At night you can hear the Chinese practicing their artillery firing. Brr! Since seeing Jim Strawn at the Chemical, Biological, and Radiological (C.B.R.) School in Eta Jima, I've run across a few more Tech men. Gil Steinberg (Quartermaster Corps) is in the 508th Salvage Company in Yong-dung-po, right outside of Seoul. Sarkis Zartarian (also Q.M.C.) is at the 443rd QM Base Depot in Seoul. Bob Elliot ('51, Q.M.C.) is with the Trucking Platoon of the Second Division Quartermaster. I haven't run into George Zavalakes as yet, but I understand he's not too far from Seoul either. Once in a while, I hear from the boys back in the States. Mike Goldman is at the Springfield, Mass., armory. Dave Weiss is at Sandia Air Force Base in Albuquerque, N.M. Paul Lux is once again a civilian, getting an early release. The weather here is mighty cold. But I hope to be back stateside again in April." It's cold here, too.

Well, enough for tonight; this little boy is pooped out. Sitting behind a desk eight hours a day is sure rugged, particularly for the Army. Here come the little white men. Off we go. – STANLEY I. BUCHIN, *Secretary*, 150 Tyron Avenue, Englewood, N.J.

• 1953 •

Rebel Sauer thought of us on Thanksgiving Day and wrote a note telling of his activities at Bartow Air Base, Bartow, Fla. Rebel mentioned that Gil Gardner and John Hilton are down at Bartow with him.

While in Boston I ran into Dan Badejo and Abraham Perera (Course I men) both of whom plan to finish at Tech in February. Dan plans to go to England for a time and then back to Nigeria. Most of you former XVII men will remember Jim Zurbrigen. Jim is now engaged to Roberta Rowell, an attractive (judging from the newspaper photo which usually gives an unvarnished picture of our physical being) student at the Chamberlain School of Professional Retailing. Jim is working in Boston awaiting orders from the Air Force.

At present I'm lying on my bunk here at Fort Lewis in the Officer's Replacement Station looking over the notes I have made in the past nine days of traveling. I thought that you might enjoy a recount of my thoughts and experiences during the trip. I started the trip in Washington, D.C., with a fellow officer named Dud Dewhirst. We followed a northern route to Peoria, Ill., where Dud had a former classmate working in the Caterpillar Tractor Plant.

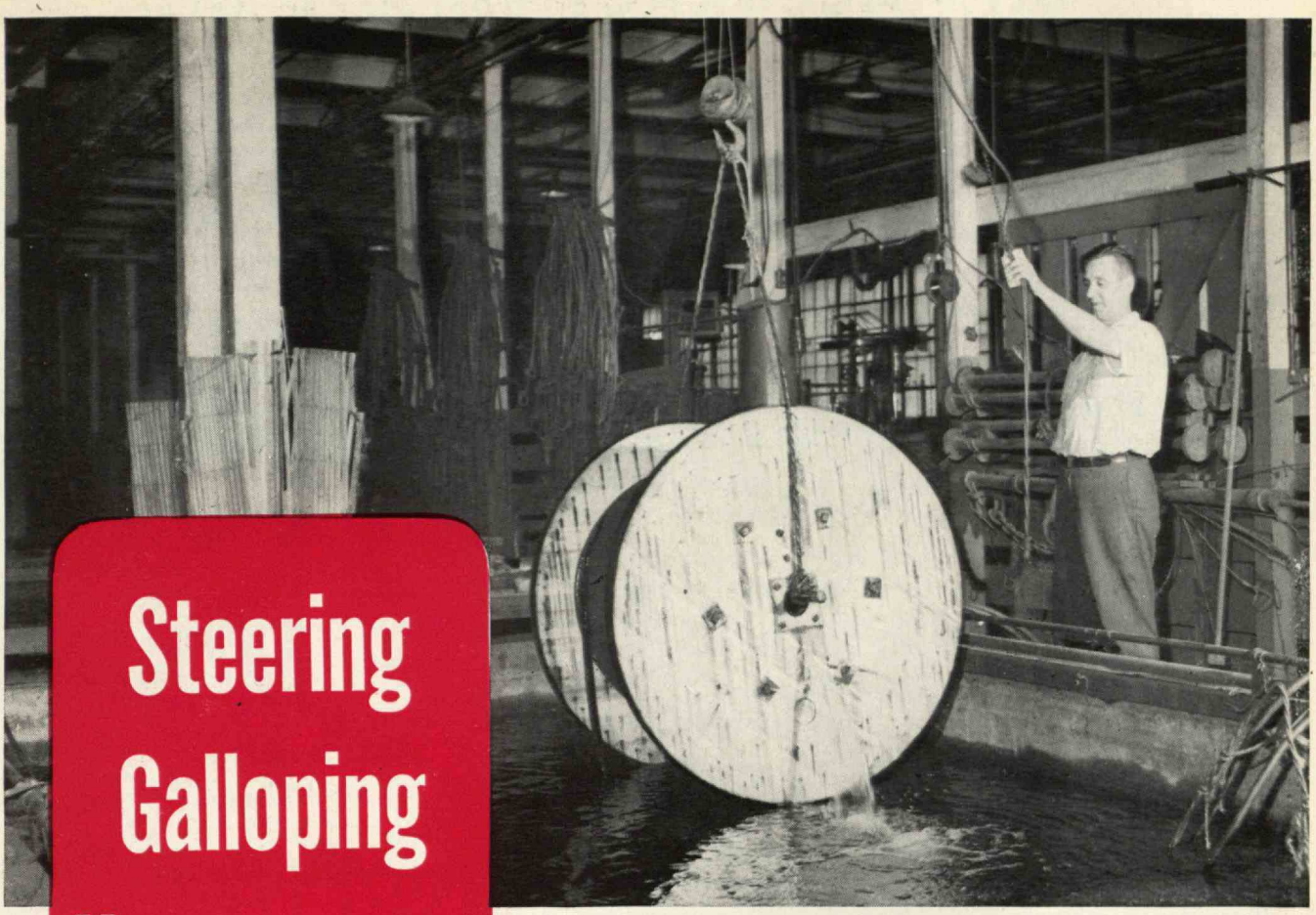
The change in terrain was fairly interesting along this part of the route. As we crossed Pennsylvania we ran into the rounded hills of the time-worn Alleghenies. These mountains became noticeably more rugged in western Pennsylvania and West Virginia, tapering off in eastern Ohio, and thereby opening before us the vast fertile prairies of western Ohio, Indiana, and eastern Illinois. We noted the frequent appearance of scattered oil wells in Ohio (although, as we were to see later, there were few compared to the great number present in Oklahoma, Texas and California).

During our stay in Peoria, Dud and I went through the Caterpillar Plant. From Peoria we headed south to Kansas City, passing through the rolling hills of Missouri, and on to the fertile plains of Kansas. We noted the Kansas City stockyards, and the presence of cattle in southwestern Kansas, as well as the many grain elevators. The prosperous air of Wichita was apparent when we viewed the newness of many buildings. The almost legendary tumbleweed made its appearance in western Kansas, but disappeared soon after we left Albuquerque. In Meade, Kansas, we found a remnant of the once lawless West – the hideout of the Dalton Gang.

We passed through Oklahoma and Texas during the darkness (no offense to you loyal Texans intended), and stopped in Albuquerque, N.M., for the night. Because of the sparsely populated areas of New Mexico, we were able to gaze upon nature in an almost untouched state. New Mexico is covered with plateau-like rises of land. As we looked toward the Mateo Mountains, we were overcome by the sheer beauty as the brown-colored sand blended into a reddish brown, then a reddish gray, and finally the black mountains with snow-capped peaks set in a sea of blue-green sky. In New Mexico, we saw the Indian village, Acoma, often called the "Pueblo in the Sky."

The next day after some 70 miles of traveling on routes 89 and 64, we pulled into a parking spot, and got out of the car; before us lay the splendor and magnificence of one of nature's most phenomenal creations – the Grand Canyon. The myriad of natural colors is beyond imagination. The surface stratum was a deep blue sandstone; as we looked down into the Canyon, we saw a vermilion color; to the left, blue and white cliffs with sprinklings of orange-red plateaus; deeper in the canyon gray-blue table lands blending into black granite precipices; and finally, in the valley, some 4,000 feet below us, the origin of the natural spectacle– the Colorado River. We left the Canyon about 5:00 P.M., and during the evening visited the Boulder Dam – a mass of concrete which extends some 700 feet downward. The floodlights of the utility buildings at the base, from our stance, seemed like dots.

During the remainder of the trip, we stopped at Sequoia National Park to view the mighty redwoods; and journeyed on to Yosemite to marvel once again at the works of nature. We saw the mass of sheer rock – El Capitan – rise 7,200 feet into the air – a combination of massiveness and daintiness as water fell in a fine mist for some 600 feet at Bridalveil Falls and about 3,000 feet at Yosemite Falls. We observed the bountiful land of southern California with its oil wells, cattle, vineyards, and citrus groves. Dud and I parted company in San Francisco. Will contact you, most probably, from the rice paddies of Korea. – VINSON W. BRONSON, JR., *Secretary*, 33 Wooster Heights, Danbury, Conn.



Steering Galloping Horsepower

Telemetering, supervisory control and switching functions cannot be left to cables whose performance rating is just "so-so." These functions require cables with constant day-by-day dependability and the physical and electrical stability to stand up to all kinds of arduous operating conditions. Human lives as well as valuable property depend on proper functioning of these cables regardless of operating conditions.

Illustrated above is just one more example of the numerous tests that all ANHYDREX Supervisory Control Cables must successfully pass. All ANHYDREX Signal and Control Cables are extremely resistant to sunlight, weather, soil acids and alkalies, vibration and water. They are guaranteed not to absorb more than 20 milligrams of water when soaked for seven days at 158° F. (70° C.).

These cables are electrically stable with high dielectric strength, low power factor, and low dielectric constant. Even after prolonged submersion in water, these features are retained indefinitely. ANHYDREX Signal and Control Cables have no lead sheaths to crystallize or corrode. Their neoprene jackets are not subject to electrolysis nor harmed by vibration.

Specify ANHYDREX Signal and Control Cables. Their light weight and small diameter make them easy to handle, splice and terminate. For more complete information, contact your nearest Simplex representative or write to the address below.

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0.1% ACCURACY from 30 c to 100 kc

The Type 1610-A Capacitance Measuring Assembly

consists of five well-integrated G-R instruments for the accurate measurement of capacitance and dissipation factor. *Two or three-terminal measurements are possible.*

In addition to its usefulness in electrical development and testing, the Capacitance Measuring Assembly finds wide application in the dielectrics laboratory and chemical research organization. The close relationship between capacitance and dissipation factor and the physical and chemical composition of a substance make this precision apparatus very useful for investigations in countless basic research problems.

★ *This assembly is widely used in conjunction with the G-R Sample Holder to study dielectric properties of plastics and other insulating materials such as steatite, teflon, polystyrene, mica and others.*

★ *Effects of interfacial polarization at low audio frequencies and dipole polarization in polymers may be investigated.*

★ *Characteristics and effects of surface water films may also be studied.*

★ *The Capacitance Measuring Assembly offers one of the best methods for measuring the Boella effect in high-valued resistors.*

★ *Characteristics of large inductors as well as resistors may be determined by substitution measurements.*

The five G-R instruments included in the Capacitance Measuring Assembly are assembled in a compact cabinet-rack complete with all interconnection provisions.

Type 1302-A Oscillator . . . supplies up to 80-milliwatts from 10 c to 100 kc.

Type 1231-BRA Amplifier and Null Detector . . . 100 μv input gives 10% meter deflection at mid-frequency range.

Type 1231-P5 Adjustable Filter . . . has eleven fixed frequencies . . . with external capacitors, any resonant frequency from 20 c to 100 kc can be obtained.

Type 716-P4R Guard Circuit . . . makes possible accurate impedance determinations between two points of a three-terminal network.

Type 716-C Capacitance Bridge . . . measures 0.1 $\mu\mu$f to 1150 $\mu\mu$f from 30 c to 300 kc and to 1 μf at 1 kc . . . direct reading in dissipation factor from 0.00002 to 0.56 . . . basic direct reading accuracy is $\pm$0.2% for capacitance and $\pm$0.0005 for dissipation factor; in substitution measurements, $\pm$0.1% capacitance accuracy with correction chart supplied, and $\pm$0.00005 for dissipation factor.

Type 1610-A Capacitance Measuring Assembly . . Complete and ready for two or three-terminal measurements **$1930.00**

Type 1610-A2 Capacitance Measuring Assembly . . . Without Guard Circuit, for two terminal measurements only . . . **$1635.00**

The unique Type 1690-A Dielectric Sample Holder is an accessory unit readily attached to the bridge unknown terminals. It permits precise determinations of dielectric constant and dissipation factor of practically any solid dielectric-material.

The sample holder's 2-inch diameter electrodes are ground to optical flatness and are micrometer driven for highest accuracy. The instrument is rugged, completely shielded and useful to 100 Mc and higher.
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